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DIAPHRAGMATIC HERNIA AND SECONDARY ANEMIA; TEN CASES*

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IN recent years non-traumatic hernia of the stomach through the esophageal opening in the diaphragm has attracted the attention of roentgenologists and of surgeons, but the literature of the subject indicates that internists have shown but little interest in this abnormality. Numerous interesting accounts of the condition have been given from a roentgenological point of view and discussions of surgical technique designed to repair the hernia have been presented from time to time. Very few detailed case histories have been recorded and the authors of this paper have failed to find satisfactory autopsy reports concerning the nature of changes occurring in the stomach except in a few instances in which acute complications have been present†.

We do not propose to discuss the anatomical possibilities of hernia through the diaphragm, the frequency of the condition, its roentgenological diagnosis or its surgical aspects, but wish to focus attention upon the question of anemia due to slow loss of blood resulting from mechanical conditions imposed upon the stomach from the stricture caused by the esophageal ring. The problem of diagnosis is difficult because there may be no symptoms referable to the stomach, and if the possibility of hernia has not been registered in the mind of the physician the condition may be overlooked, or, if found by x-ray examination, surgery for other conditions may be undertaken since the inclination of the clinician is to make a diagnosis of a silent undemonstrable ulcer of the stomach or malignant disease of the colon.

Hemorrhage from the stomach is readily explained when ulcer or gastric erosions are present as shown in the papers of Truesdale[1] and Harrington[2]. These conditions, however, are relatively uncommon since Truesdale, in 1932, was able to collect from the literature only seventeen cases of ulcer complicating diaphragmatic hernia. In the series of ten patients having anemia whose histories are incorporated in this paper, no history suggesting ulcer was obtainable and x-ray findings were negative for this lesion. To account for the cause of the bleeding, to our great advantage, three patients of this series have had thorough abdominal explorations by able surgeons and two others have come to autopsy. This communication is offered with the hope that it may aid in the recognition of an interesting, disabling syndrome, and to give at least one answer to the cause of bleeding.

In 1929, one of us[3] presented a brief account of three patients, Cases 1, 2 and 3 of the present series, whose chief complaints were due to anemia secondary to blood loss as shown by the presence of occult blood in the stools. Two of these patients had a history of passing tarry stools. In addition to anemia the only other major factor common to the three was the presence of hernia of the stomach through the esophageal orifice of the diaphragm, demonstrated by x-ray examination. Cases 1 and 2 underwent abdominal explorations because malignant disease of the colon was suspected in the first and a possible bleeding gastric ulcer in the second. No lesions other than diaphragmatic herniae were found. A detailed account of this condition could not be found in the literature although mention of hemorrhage is common. Hedblom[4], for example, in a study of three hundred and seventy-eight cases noted that hematemesis, melena and anemia were among the findings occasionally noted. Recently Segal[5] has briefly described two cases, one of which (Miss E. S.) is our Case No. 2, and Weitzen[6] has reported two cases. Segal also collected from the literature six cases in adults and two in infants. More recently Gardner[7] has discussed the question of anemia associated with diaphragmatic hernia. From the literature he collected ten additional cases without demonstrable ulcer and added four similar cases from private sources.

The silent nature of many of the case histories with reference to the stomach, certain vagaries mentioned by the patients in the discussion of symptoms, the tendency to recurrence of bleeding, the absence of physical signs, data concerning the blood and other findings can be presented most satisfactorily by the case history method. These case records may appear to be unnecessarily long but they form the

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†In Lewis' Practice of Surgery, 1930, Vol. V, Hedblom lists a bibliography on the subject of diaphragmatic hernia composed of 349 papers of which 208 or 60 per cent have been published since January 1, 1920.

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real substance of this communication and they leave no doubt in the mind of the reader as to the nature of the underlying condition.

CASE HISTORIES

CASE 1. Mrs. B. K., a white woman, aged 51 years, was referred for examination by Dr. Arthur M. Jackson, January 21, 1928.

The previous history contains no reference to the present complaints of weakness, dyspnea, palpitation, dizziness and gas in the stomach during the past year. Her appetite has been variable, her weight 175 pounds. She spends the mornings in bed and is unable to carry on her housework.

Her physical examination showed a well-developed, overweight person exhibiting general pallor of slight yellowish tint. The tonsils were of moderate size, a few small glands were palpable at the base of the left anterior cervical chain. The heart was perceptibly enlarged, having a systolic murmur at the apex, the pulse rate was 100 and blood pressure 160/90. Other findings were normal.

Her hemoglobin was 55 per cent, red blood cells 3,840,000, white blood count 15,600; polymorphonuclears 83, lymphocytes 12, large mononuclears 5. The platelets were increased in number, achromia was present and there was variation in the size and shape of the red cells. Several stools examined in the next few days showed 4+ guaiac reactions.

On January 22 and 23 x-ray examination of the gastro-intestinal tract by Dr. Richard Dresser revealed the following: "The stomach was empty after six hours. Peristalsis was active. The median and pyloric portions of the stomach were negative. The cardiac portion of the stomach projected upward above the level of the diaphragm. This herniation occurred approximately in the mid-line. The duodenal cap was smooth in contour. At six hours the colon was well filled from the cecum to the rectum, part of this being residue from the barium enema. The colon was examined both by meal and enema. It filled without delay. There was no deformity, no fixed or tender areas and no spasm. Fluoroscopic examination of the chest showed both diaphragms moving normally with respiration. The heart shadow appeared normal. The lungs presented no gross abnormality. Conclusions: I can make out no evidence of malignancy of the gastro-intestinal tract. There is, however, a definite diaphragmatic hernia present."

Because of the opinion that malignancy could not be ruled out, the patient was admitted to the West Surgical Service of the Massachusetts General Hospital on January 31, 1928, for abdominal exploration. On February 2, two stool specimens were negative for blood. The hemoglobin was 60 per cent, red blood count 3,670,000, white count 10,300 and the differential count showed polys 68 per cent. Exploratory laparotomy was performed on February 3 by Dr. E. P. Richardson. Thorough examination of the abdomen was made with negative results except for the following, taken from Dr. Richardson's operative note: "At the cardiac orifice there was an opening about 6 cm. across, oval transversely. Through this the fundus of the stomach had prolapsed. The stomach was readily delivered. The part entering the hernia seemed to be the anterior part of the fundus. No attempt was made to close this ring which would have been difficult on account of the shape of the opening and the tension on the diaphragm. There appeared to be no source of hemorrhage within the peritoneal cavity."

Recovery from the operation was uneventful. The stools continued to show the presence of occult blood. The patient was discharged from the hospital on February 20, 1928. On that day her hemoglobin was 70 per cent and red blood cells 4,230,000. She was advised to take a simple low residue diet, 200 grams of liver in puree form and 50 grains of Blaud's pills daily.

Following the hospital period the patient spent ten weeks in bed. Later, in the middle of July, she went to Maine but began to lose strength again, accompanied by a return of palpitation, dyspnea and dizziness. During the autumn she was unable to leave the house. On December 10, 1928, her hemoglobin was 60 per cent. When examined again on December 17, her general appearance and examination were similar to that found on January 21. Her hemoglobin was 55 per cent red blood cells 3,040,000, white cells 10,600. The platelets appeared normal in size and number. The differential count showed polys 73, lymphocytes 19, eosinophiles 3, mast cells 1, large monos 4. Reticulocytes were 7 per cent. The appearance of the red cells was characteristic of simple secondary anemia. Two stools passed on the sixteenth and seventeenth showed 4+ guaiac reactions. Bed rest was advised, and continuation of a smooth diet containing pureed vegetables with liver and Blaud's pills. On January 11, when seen again, she was much improved. Her hemoglobin was 70 per cent, red blood cells 4,500,000, white cells 9000. Three stool specimens were negative for occult blood. On January 18, a stool specimen showed no blood but on the following day a 2+ guaiac reaction was again found. On February 18, 1929, three stool specimens sent in for examination were negative and the patient was much improved.

When seen again on May 18, 1929, she had been through an attack of bronchopneumonia of three weeks' duration in April, with good recovery. On May 18 a stool examination was negative, her hemoglobin was 80 per cent, red cell count 4,400,000, white count 8000. She was advised to continue on a low roughage diet and take five Blaud's pills daily.

On December 7, 1929, she reported that she had had a fine summer and was symptom-free.

On March 13, 1933, a letter states that she developed diabetes in 1932. As a result of dietary care she has lost 45 pounds in weight, has had no gastric symptoms and feels well.

CASE 2. Miss E. S., a white woman, aged 66, was seen on August 24, 1928, at the Deaconess Hospital, where she was a patient of Dr. Daniel Fiske Jones.

During the past fifteen years she had had frequent bouts with anemia and prior to two years ago had spent three periods of at least six weeks each in bed because of anemia. She had taken iron irregularly for many years. During the past two years she had had a persistent anemia with variations in its intensity. Her physician had once remarked that her blood "went up and down like an elevator". There was no history of indigestion until a year ago when she developed a gnawing sensation between meals, relieved by food and gas. Ten years ago after an automobile ride she suddenly vomited some coffee ground material. For four years she had passed dark-colored stools frequently and after an automobile ride she might pass a tarry stool, especially during the past two years. In this period she had, for the most part, led a bed and chair existence because of weakness. In November, 1926, she was studied in the Strong Memorial Hospital, Rochester, New York, where a diagnosis of diaphragmatic hernia of the stomach was made and the question raised as to the presence of an ulcer. Her weight was 124 pounds.

In the past, hysterectomy for fibroids was done

ten years ago. She has a brother who also has a diaphragmatic hernia.

She was admitted to the Deaconess Hospital on August 12, 1928, and both before and after operation her temperature reached 99.5 to 101°. The pulse rate was 80-90. Except for pallor her physical examination was negative. Her blood pressure was 130/70. Her urine was normal, Wassermann negative, hemoglobin 50 per cent, white count 5300 and differential count normal. Gastric analysis showed low normal values for free and combined acid. The phthalein excretion was 60 per cent. She was transfused with 650 cc. of blood on August 14. On August 15 her hemoglobin was 60 per cent, red count 5,350,000, white count 8400. Her stools showed 4+ benzidine tests. On August 17 her abdomen was explored by Dr. Jones who found the stomach prolapsed through a large esophageal ring. There was no evidence of pathology about the stomach or duodenum. No other abnormalities presented in the abdomen. The hernia was not repaired. The postoperative course was not eventful except that she continued to have moderate fever and to give evidence of occult blood in the stools.

On August 24, 1928, her hemoglobin was 65 per cent, red count 3,664,000, white count 12,000. The differential count was normal. The coagulation time was six minutes and the clot retraction was normal. Reticulocytes were 2 per cent. The red cells averaged small in size and showed moderate achromia. The platelets appeared to be increased. The blood picture was that of chronic secondary anemia.

A letter from the patient dated August 16, 1930, states that she is forced to lead a life of limited activity, feels faint when she stands, but has a good appetite and "perfect digestion". On April 12, 1933 she wrote that she was having an "attack of anemia".

CASE 3. Mrs. A. L., a white woman, aged 73, was seen in consultation with Dr. P. A. Brooke in Worcester on November 24, 1928.

The patient's chief complaint was weakness. Four years ago, following the death of her husband from cancer, she had a prolonged illness, which was called a nervous breakdown. At that time her physician found anemia and there was occult blood in the stools. There had been no gastro-intestinal symptoms. Examination by x-ray was said to have revealed the presence of a gastric ulcer. Following this examination she was kept in bed about three weeks, giving a history of having passed several tarry stools. Since that time she has not felt as well as usual, being nervous, but has gained in weight. There was also for many years a history of ups and downs in health, often necessitating bed rest, suggesting the possibility of many previous attacks of anemia.

On October 28, 1928, Dr. Brooke was asked to see her because of weakness, dyspnea and palpitation. Aside from the fact that she presented a sallow color, the general examination was negative. She was of a stocky, heavy type. Her blood pressure was 120/80, pulse 86, respirations 20. There was diastasis of the recti, the liver edge was felt 3 cm. below the costal margin and there was tenderness over the region of the spleen. Her hemoglobin was 50 per cent, red count 2,800,000, white count 8500; the blood smear showed polynuclears 67, lymphocytes 24, eosinophiles 7, large mononuclears 4. The platelets appeared normal. Achromia of the red cells and increased polychromatophilia were present.

She was admitted to the Worcester City Hospital for study on November 2. Gastric analysis showed no free hydrochloric acid and no occult blood. A gastro-intestinal x-ray series revealed a typical hernia of the stomach through the esophageal orifice of the diaphragm. The stomach emptied normally; the duodenum was visualized and found normal. A barium enema was negative. Liver, iron and a balanced diet were prescribed, but because of poor appetite the patient was unable to take adequate nourishment. Frequent stool examinations always developed strongly positive guaiac reactions.

On November 17 her red cell count was 2,500,000, white cell count 6400 and hemoglobin 45 per cent. The general condition of the patient had failed and she exhibited some degree of disorientation.

When examined on November 24, 1928, her complaint was weakness. There was pallor of the skin, sclerae, tongue and mucous membranes. The lungs were normal and no abnormality was found by percussion with reference to movement of the diaphragm. The cardiac impulse was felt in the fifth space in the nipple line, the rhythm was normal and a systolic murmur was heard at the apex. Blood pressure 120/80. Her hemoglobin was 45 per cent, red cell count 2,800,000, reticulocytes 3 per cent. On examination of the blood smear the findings were those of severe secondary anemia.

A diagnosis of secondary anemia due to bleeding from the stomach incident to a diaphragmatic hernia was made. A low roughage diet and 50 grains of Blaud's pills daily were prescribed. The prognosis seemed limited to a few weeks or months.

Within a few weeks the stools became free of blood and within six months her hemoglobin and red cell count were normal. She spent the winter of 1930 in Florida and while there apparently had recurrence of anemia great enough to require bed care. Six months before her death her red cell count was 4,320,000 and the hemoglobin was 80 per cent. The blood smear appeared normal except for an apparent increase in size and number of the blood platelets. The stools were then negative for occult blood. On several occasions since 1928 her systolic blood pressure was found to be 200 mm. or over, with the diastolic pressure usually below 100 mm.

In the last few months of her life she became psychotic, refusing medical care. Her death occurred on October 19, 1932, as a result of an acute infection of unknown nature. The autopsy findings are reported below.

CASE 4. MRS. J. L. H., a white woman, aged 68 years, was not seen by the authors, but we are permitted to include the record of her study made by Dr. Franklin W. White. He examined her on April 30, 1929.

There was a history from 1902 to 1919 of occasional attacks of epigastric pain and vomiting lasting several hours. Rarely she had a feeling that food did not go into her stomach and at times she noticed epigastric and lower substernal pressure. She had also experienced regurgitation of a mouthful of food or mucus. There was no history of constipation or of loss of weight, the average weight being 155 pounds. In general she had not felt up to par for the past eighteen months.

In her present history she noticed in February rapid heart action, dyspnea and passage of black stools. In March, following an attack of epigastric distress, she fainted and soon after passed several shiny black stools. She was very faint on standing.

Her blood was examined by her local physician on April 1, 1929, with the following result: hemoglobin 30 per cent, red blood cells 2,210,000, white blood cells 9500, polys 82, lymphocytes 10, eosinophiles 1, large monos 7. The red cells showed achromia, great variation in size and shape, some basophilia and one nucleated red cell. On the same

date the stool contained occult blood and fresh blood cells were seen on microscopic examination. The urine contained a slight trace of albumin.

On examination by Dr. White she is described as a short heavy type having a wide costal angle. Except for pallor, a slightly enlarged heart and blood pressure of 190/80, the other physical findings were not of special significance.

X-ray examination showed a large diaphragmatic hernia of the stomach, the shadow above the diaphragm measuring about 5½ inches in diameter. It was estimated that 50 per cent of the stomach was above the diaphragm, and the rugae of this portion were plainly visible. The stomach was empty in six hours. The colon was normal. The patient had been in bed ten weeks on an ulcer type of diet, had had liver extract three times daily and citrate of iron, the amounts not being specified in the record.

By June 20, 1929, her hemoglobin had reached 50 per cent and her red cells numbered 3,800,000 per c.mm. She was explored on June 22 by Dr. Daniel Fiske Jones who found a hernia of the stomach through a large esophageal ring. There was no evidence of ulcer, of dilated veins, or of pressure on the stomach from the hernial ring. No attempt was made to reduce the size of the ring. During the hospital stay the stools remained negative for occult blood. The icteric index was 4. The urine was normal.

On July 3 the hemoglobin was 50 per cent, red blood cells 4,200,000, white blood cells 8900. Fragility tests of the red cells were within normal limits. On July 26 the hemoglobin was 70 per cent, red blood cells 3,500,000. The patient was gaining steadily on large doses of iron and liver. On December 15, 1929, the hemoglobin was 85 per cent, the red blood count was 5,490,000 and the patient had gained ten pounds in weight. On May 23, 1930, the blood picture was again normal and has remained so up to the last note, June 20, 1932, without recurrence of any gastric symptoms.

In this case, the question is raised by Dr. White as to the relation of hypertension to hemorrhage. Specifically the question cannot be answered, but it is to be noted that hemorrhage of similar nature occurs in other cases of the series in the presence of normal blood pressure.

CASE 5. Miss A. B., a single white woman, aged 55, entered the hospital August 29, 1929, complaining of weakness, dyspnea, palpitation and dull pain and some swelling of the left lower leg. She had gone to Nantucket near the middle of June feeling well, but during July noticed the onset of the symptoms mentioned above. Her physician found that she was anemic and prescribed liver and subcutaneous injections of iron, but the anemia steadily became worse.

Additional data obtained from the notes of a former physician are of great interest, especially with reference to the blood findings. On October 3, 1927, she came for examination because of the fear that she might have heart disease. Three months before a physician had told her that she had anemia and that the blood slide examined was compatible with a remission of primary anemia. Her complaint was shortness of breath and rapid pounding heart beats. The only significant finding on physical examination was that of anemia. The red cell count was 3,400,000 and the blood smear was characteristic of secondary anemia. Liver and iron therapy were prescribed. She was seen again September 25, 1928. In May she had had her gallbladder drained during a severe attack of cholecystitis. One gallstone was removed and the gallbladder drained by Dr. Arthur W. Allen. She had an uneventful convalescence. Her blood now showed hemoglobin 85 per cent, red count 4,490,000 and a normal differential count. On January 19, 1929, the red count was 4,550,000, white count 6500 and hemoglobin 85 per cent. The blood smear was normal. On February 14, 1929, her hemoglobin was 66 per cent, red count 3,940,000. The differential count was not abnormal but the blood smear showed achromia, moderate variation in size of the red cells and increased platelets. On March 12, 1929, the red count was 4,290,000, white count 6500, hemoglobin 67 per cent. The differential count was normal and the red cells typical of secondary anemia. On April 16, 1929, the red count was 4,270,000, the white count 9500, the hemoglobin 75 per cent, the reticulocytes 2 per cent. One nucleolated red cell was seen. Achromia was still present. Iron and liver in adequate amounts had been prescribed and taken.

To return to the present study, there is no history of indigestion except for two attacks of abdominal pain, the first in 1927. After the second the gallbladder had to be drained in May of 1928. Following the operation her menstrual periods had ceased without event. Her bowels were slightly costive. There was nothing else in the past history of significance.

During her physical examination she volunteered the information that in February, 1927, Dr. L. B. Morrison in an x-ray examination of the gastro-intestinal tract had found a large hernia of the stomach through the diaphragm, but her physicians had disregarded this. She was a short, stout, pale woman. The physical examination was otherwise negative, except for the presence of overweight and anemia, an abdominal scar in the upper right rectus region, a palpable liver edge at the level of the navel, and some edema of the left lower leg with tenderness on pressure over the calf. Blood pressure was 110/80. The urine was normal. The hemoglobin was 55 per cent, red count 2,650,000, white count 11,000. The differential count showed polys 67, lymphocytes 29, eosinophiles 1, large mononuclears 4. The platelets were greatly increased, achromia and variation in size and shape of the red cells was great, and there were 4-5 per cent of polychromatophilic cells. The stool examined for occult blood showed a 4+ guaiac test.

A diagnosis of bleeding into the stomach secondary to conditions imposed by the hernia of the stomach through the diaphragm was made, together with a low-grade phlebitis in the left lower leg.

Treatment consisted of bed rest, a six meal bland low residue diet, one glass of liver puree and ten Blaud's pills daily. She continued to run a fever, due to the phlebitis, from entry until September 20, the highest temperature being 100°; the pulse rate averaged between 80 and 90. From September 21 until her discharge from the hospital on October 5 her temperature was normal and pulse rate near 70.

Daily stool examinations showed 4+ guaiac tests until September 19; after that date a trace only was found on a few occasions. On September 12 the hemoglobin was 65 per cent, red count 3,640,000, the white count 12,000. On September 19 the hemoglobin was 70 per cent, red count 4,100,000, white count 7600. The differential count showed polys 60, lymphocytes 24, eosinophiles 2, mast cells 2, large mononuclears 12. The platelets appeared normal. There were many normal red cells, but there was still variation in size and shape of the cells showing achromia. There was no stippling. September 26, the hemoglobin was 80 per cent, the red count 4,700,000, the white count 8000, the differential count normal. October 4, the hemoglobin was 80 per cent, the red count 4,800,000, the white count 8000.

On October 3 and 4 a gastro-intestinal examination

was done by Dr. George W. Holmes and the following is his report:

"In the midline, beyond the shadow of the heart, there is a rounded shadow about 9 cm. in diameter which is constant in all films taken; the esophagus passed around it to enter the stomach near the diaphragm. As the stomach filled the barium was seen to flow into the shadow just described; normal gastric rugae could be made out within it. The lower portion of the stomach shows prominent rugae but is otherwise normal. The pyloric sphincter and first portion of the duodenum appeared normal. The lung fields are clear except for the area described. The heart shadow is large, particularly in the region of the ventricle. The colon was examined both by meal and enema and no definite lesion found. The position of the diaphragm is normal on both sides, and its respiratory movements are not restricted. Films taken of the gallbladder failed to show any evidence of gallstones and the gallbladder shadow is not visible after taking the dye. Conclusions: Examination shows definite evidence of protrusion of the stomach through the diaphragm; diaphragmatic hernia; there is also evidence of lack of function of the gallbladder."

After discharge from the hospital on October 5, 1929, the patient was asked to send in a specimen of stool once a week, which was done; in twenty such specimens no blood was found. When seen again April 7, 1930, she had had a good winter. She complained of some intestinal gas; her bowels were acting regularly with the aid of mineral oil. There were no symptoms referable to the stomach. Her blood showed hemoglobin 70 per cent, red count 3,990,000, white count 7000. The differential count showed polys 55, lymphocytes 28, eosinophiles 19, large mononuclears 11. The blood smear showed moderate achromia. The stool was negative for occult blood and ova. The eosinophilia was attributed to ingested liver which she had continued throughout the winter. A stool specimen examined two days later was again negative. On October 14, 1930, she appeared for a check-up, having had a fine summer. Her hemoglobin was 75 per cent, red count 4,000,000. The differential count showed polys 60, lymphocytes 16, eosinophiles 18, mast cells 1. The red cells and platelets were not remarkable. A stool specimen contained no occult blood or ova.

On May 18, 1931, there were no special complaints. The blood showed a red count of 4,990,000, white count 7000, hemoglobin 85 per cent, and a stool specimen displayed a 3+ guaiac test. She was advised to spend a quiet week at home in bed and chair. Following this, three stool examinations were negative for occult blood. Her weight throughout this period remained unchanged at 150 pounds. A letter dated November 11, 1932, states that she is quite well.

CASE 6. Mrs. J. L. C., a white woman, aged 66, was first examined April 13, 1931.

This patient had had a cerebral hemorrhage in 1928 and complained of weakness and attacks of angina pectoris. Beginning in October, 1931, she suffered from repeated attacks of right upper quadrant pain accompanied by nausea and vomiting. There was a history of many similar attacks thirty years ago. For a period of about five years she has noticed, when stooping over, an acute temporary distress in the left lower chest, as if a "rib had slipped out of place."

At the initial examination in April she was found to be a short stocky individual, apparently in good health. Height 5 feet 3 inches, weight 135 pounds. Her mucous membranes appeared normal in color but her hemoglobin was recorded as 70 per cent. No abnormality was found in the lungs or heart. The blood pressure was 165/85. The liver edge was palpable 8 cm. below the costal margin and the upper border of liver dullness was in the fifth intercostal space. Beneath the liver edge a hard discrete mass was palpable and taken to be the gall bladder. The spleen was not felt. Rectal examination revealed some old external hemorrhoids. There was evidence of moderate peripheral arteriosclerosis.

In November, 1931, because of the history suggesting the presence of gall stones an x-ray investigation was made by Dr. A. O. Hampton, with the following results: "The esophagus is short and redundant. It enters the cardiac end of the stomach above the diaphragm. The upper two thirds of the stomach appears to be within the thoracic cavity behind and to the right of the heart shadow. The lower third of the stomach passes through the diaphragm at the esophageal orifice which appears two or three times normal diameter. The pyloric end of the stomach and first portion of the duodenum are to the left of the mid line, otherwise normal in appearance.

"Films taken of the chest to demonstrate the stomach also show calcification in the arch of the aorta and possibly some enlargement of the heart. The lung fields are essentially clear. The stomach remains in position when the patient is upright and does not change appreciably with respiration.

"Barium passed to the cecum without appreciable delay although there was some spasm along the sigmoid and right colon. Scattered along the course of the colon there are numerous extraluminal pockets of barium which extend from the cecum to the rectum. There is no other variation from the normal seen in the colon.

"In the films taken of the abdomen, there is a large area of calcification which has the shape of the gallbladder and which presents a mottled appearance.

"Conclusion: The findings are those of arteriosclerosis, mild hypertrophy and dilatation of the heart, diaphragmatic hernia, diverticulosis, diverticulitis and cholelithiasis."

In view of these findings a check-up on blood and stools was done on November 12. The hemoglobin was 75 per cent, red blood count 4,300,000, white count 5000. The blood smear showed polys 70, lymphocytes 20, eosinophiles 2, large mononuclear 8. The platelets were increased in number and the red cells showed achromia. Two stool specimens of November 9 and 10 showed 4+ guaiac reactions. On November 25 one stool specimen was negative for blood but another on November 30 had a 4+ guaiac reaction. On November 30 the patient was fluoroscoped by Dr. P. D. White before and after filling the stomach with barium. This was done to see if the herniated portion of the stomach might interfere with freedom of cardiac action. There was no apparent embarrassment of the heart and the electrocardiographic tracing was normal.

The following is the result of a series of stool examinations for occult blood: December 8, 1931, stool negative; January 9, 1932, stool strongly positive; January 15 and 21, stool negative; January 26, stool positive; January 27, stool negative; February 1, stool positive; February 4 and 6, stool negative; February 10, stool positive; February 25, March 3, 10, 24 and April 9, stool strongly positive. No gross blood was apparent in any of the stool specimens.

Because of weakness she had spent most of the winter at home in bed and chair. She was not seen from November 30, 1931, until March 24, 1932. She complained of weakness and dizziness but had gained nine pounds in weight. Her appetite was

excellent, her stomach and bowels in good order. Except for slight pallor no new findings appeared from the physical examination. Her hemoglobin was 65 per cent, red blood count 4,056,000, white blood count 7600. The differential count was normal; the red cells showed achromia and moderate variation in size and shape. The urine was negative.

When seen again on June 14 she was much improved. She had been taking a low residue diet and ten Blaud's pills daily since last November. There was no clinical evidence of anemia. No changes were noted in the physical examination. Her blood pressure was 160/70. Her hemoglobin was 80 per cent. The red cell count was 4,248,000, the white cell count, 7000. The differential count showed polys 76, lymphocytes 7, eosinophiles 1, large mononuclears 15, mast cells 1. There was slight achromia and slight variation in size and shape of the red cells. The platelets appeared to be normal in number.

On June 21, 1932, a stool was positive for blood.

When seen again on November 9, 1932, she had been well during the summer. For the past six weeks she had had indigestion characterized by gas and "sour stomach", relieved by milk of magnesia. There was also soreness felt along the right costal margin, and tenderness on pressure over the gallbladder. Blood pressure 175/80. Weight 140 pounds. Her hemoglobin was 80 per cent, red count 4,176,000, white count 6400, polys 83 per cent.

On February 23, 1933, renewal of hemorrhage was again evident from a hemoglobin of 70 per cent and the presence of occult blood in the stool.

CASE 7. Mrs. C., a white woman, aged 69, a patient of Dr. Franklin P. Lowry, was admitted to Phillips House September 29, 1931, for study by Dr. Francis T. Hunter, and was seen with him in consultation.

She was first observed by Dr. Lowry on January 9, 1928, when she complained of poor appetite, weakness, dyspnea, palpitation and occasional constipation. At various times she complained of a feeling of constriction of the esophagus and distress under the sternum after eating, lasting from one to several hours, but she did not consider these as important symptoms. On two occasions her stools had contained tarry blood. Her examination showed pallor and a blood pressure of 140/80. The following laboratory data were obtained: hemoglobin 45 per cent, red cell count 4,120,000, white blood count 6600; smear, polys 69, lymphocytes 17, eosinophiles 5, mast cells 2, large mononuclears 7. The red cells showed moderate anisocytosis.

Dr. Hunter obtained the additional history that the patient had had to take iron all her life or she would develop anemia. In the last six years she had had four serious attacks of anemia, in the last of which she had been transfused in July of 1931. There was no history of blood loss except for tarry stools as noted above. No history of weight loss; weight 136 pounds.

According to her past history, she had had scarlet fever at 6, typhoid fever at 8; a uterine operation at 38; cholecystectomy for gallstones at 56. She did not marry until after her menopause. Following her gallbladder operation she never considered herself as well as previously.

On physical examination there was marked pallor, evidence of arteriosclerosis, an enlarged heart with the apex in the anterior axillary line, fifth space, and a loud blowing systolic murmur at the apex. The blood pressure was 220/60. In the abdomen the liver edge was palpable 3 cm. below the costal margin.

The blood examination was as follows: hemoglobin 35 per cent, white cell count 10,800, red cell count 3,600,000. Smear: polys 79, lymphocytes 9, eosinophiles 3, basophiles 2, mononuclears 7. Red cells showed achromia, variation in size and shape, some polychromatophilia, and the platelets were increased. The urine was negative. The excretion of phenolsulphonphthalein was 60 per cent in two hours. The icteric index was 2·5; the van den Bergh was too low to read. During the hospital stay occult blood was found repeatedly in the stools. The Wassermann was negative.

X-ray examination of the gastro-intestinal tract by Dr. G. W. Holmes showed the following: "There was definite delay in the lower end of the esophagus, which at this point was displaced to the right and somewhat dilated. The heart was displaced to the left, its right border being hidden by the shadow of the spine and esophagus. The diaphragm on the left side was high, its respiratory movements limited. There was some haziness along the axillary border in the angle between the heart and diaphragm. About one-third of the stomach appeared to be above the diaphragm; the two portions of the stomach communicate freely, they empty when the patient stands and fill when she lies down, but the hernia is not reduced in any position. There was no irregularity of gastric outline or change in peristalsis. The pyloric sphincter and first portion of the duodenum appeared normal. The colon was examined both by meal and enema and no organic lesion found; it was very long with a low hepatic and high splenic flexure.

"Conclusions: The findings are those of hernia of the stomach through the esophageal hiatus. It is apparently fixed in this position and causes displacement of the heart to the left. There is also some evidence of pleurisy at the left base."

As a result of iron therapy the reticulated cells rose from 1.7 to 7.5 per cent in five days. On the day of discharge from the hospital, October 17, 1931, the hemoglobin was 55 per cent, white cell count 7200, red cell count 4,800,000. The smear showed about the same appearance as at entry. The patient left the hospital feeling greatly improved.

CASE 8. Mr. A. H. R., a white man, aged 59, a patient of Dr. D. J. Kiley, North Attleboro, Massachusetts, was seen on December 10, 1931.

In June, 1931, he first noticed distress across his upper abdomen while sitting in a chair or while driving his car, but not while standing or lying. This distress might last an hour and disappear. Later some distress appeared after eating, not relieved by soda but possibly eased by bismuth. In July his symptoms cleared up entirely for three weeks. Every fall for twenty years he had had some trouble of this sort for a period of two weeks. His bowels were constipated during the past summer, which was an unusual experience for him.

During the past four years he had had eighteen attacks described as follows: On beginning a meal he would suddenly be unable to swallow; then if he drank a glass of water the whole amount might suddenly be returned as if by an inward explosion. The impression was that a large bubble was obstructing the lower esophagus. Such an experience came only when he was nervous or in an irritable state. Relief might be obtained by sipping water slowly. The patient attributes these occurrences to his nervous state brought on by a number of recent deaths in the family and by uncertain business conditions. His weight was stationary at 155 pounds.

The family history and past history were not of importance in the present connection.

When examined by Dr. Kiley in October he was found to have severe anemia: hemoglobin 55 per

cent, white count 7400, red count 3,440,000. The differential count showed polys 53, lymphocytes 41, eosinophiles 3, large mononuclears 3. There was some achromia of the red cells. On October 6 and 7, 1931, an x-ray study of the gastro-intestinal tract was made by Dr. M. C. Sosman at the Peter Bent Brigham Hospital with the following results: "The esophagus appeared normal except that it was displaced posteriorly and to the right at its lower end. Part of the stomach was herniated through the esophageal opening which was best shown in the supine position in which about one-half of the stomach was above the diaphragm. The rugae in the herniated portion appeared large. There was no six hour residue. The stomach, cap, ileum and cecum otherwise appeared normal. Hypermotility was present."

On examination he was found to be a well-developed man in a state of good nutrition, with normal color. No noteworthy abnormalities were found. The blood pressure was 125/75. A single specimen of urine was negative. The hemoglobin was 85 per cent, the white count 7800, the red count 5,300,000. Differential count: polys 79, lymphocytes 16, mast cells 1, large mononuclears 4. The red cells and platelets appeared normal. A stool specimen was negative for occult blood.

On May 16, 1932, examination of a stool for occult blood was strongly positive. The patient was advised to remain in bed. On May 23 no blood was present in the stool sent in for examination. On June 16 another strongly positive test was obtained.

On February 8, 1933, he gave the following significant history. On September 7, 1932, he had a period of 24 hours during which he was unable to swallow even a sip of water. He finally tried drinking a glass of water which, after the third swallow, was followed by a sensation of the water passing over a lump in the mid portion of the esophagus, and thereafter the obstruction was completely relieved. His present weight is 160 pounds. His physical examination was negative. His hemoglobin was 85 per cent, red count 4,600,000, white count 7000. The differential count showed polys 70, lymphocytes 21, eosinophiles 1, large mononuclears 8. The red cells and platelets were normal. A specimen of stool was negative for occult blood.

The chief point of interest in this patient's gastro-intestinal history is the acute obstructive symptomatology presumably originating at the cardia, usually of very short duration.

CASE 9. A white woman, Mrs. M. D. A., aged 79, was referred by Dr. Walter Bannerman to Dr. Charles G. Mixter for cholecystectomy. Her record is included in this series of cases with the permission of Dr. Mixter.

She was admitted to the Baker Memorial Hospital on October 31, 1932, with the following history: Except for varicose veins in both legs and "rheumatism" in all joints, she was well up to fifteen years ago. She was then seized with epigastric distress, pain in the right upper quadrant and nausea relieved after several hours with morphia. During the past fifteen years these attacks have recurred two or three times a year, most of them requiring morphia for relief. Between attacks she ate well and had no gastric symptoms. She has taken phosphates for her bowels and has had a daily bowel movement.

Three weeks ago a severe attack of pain suddenly started and ever since she has had pain day and night associated with tenderness in the right upper quadrant of the abdomen. Vomiting has occurred daily and she has retained little food since the onset.

She has been married 57 years, her husband is living at 82 and eight children are living and well. She had had a hysterectomy because of fibroids by Dr. Samuel Mixter 27 years ago.

On examination she was found to be moderately jaundiced, with a wrinkled atrophic skin, a barrel-shaped chest with emphysema, negative findings as to the heart, blood pressure 120/80, and the abdomen, in addition to the scar of the former operation, showed right upper quadrant tenderness and a mass taken to be the gallbladder. The urine contained a trace of albumin, a few hyaline casts and bile +++. The hemoglobin was 60 per cent, red cell count 4,000,000, white count 10,700 and the differential count showed 78 per cent of polys. There was achromia of the red cells. The only stool specimen examined revealed a 4+ guaiac test. The non-protein nitrogen was 34 mg. per 100 cc. of blood, the bleeding time two minutes, clotting time 17 minutes and the clot retraction normal.

By x-ray the Graham test was positive but no stones were visualized. Dr. A. O. Hampton found: "The stomach is above the diaphragm and the esophagus enters it at the upper margin of the diaphragm at the usual position. This herniation of the stomach remains constant even when the patient is standing. The opening in the diaphragm is apparently at the esophageal orifice and it is sufficiently small to prevent the free flow of barium through it. The herniation descends with descent of the diaphragm which suggests that it is adherent. No organic disease was demonstrated in the esophagus, stomach or duodenum. The findings are those of left diaphragmatic hernia. There are multiple small diverticula in the colon. The findings are those of left diaphragmatic hernia, multiple diverticula of the colon and probable pathology of the gallbladder."

On November 4, cholecystectomy was performed by Dr. Mixter. A large stone was found in the ampulla of the gallbladder. The patient did not do well following the operation and died on November 6.

A letter from Dr. Bannerman states that in the six years during which he knew the patient there was no suggestion of periods of anemia.

A summary of the pertinent autopsy findings is given below.

CASE 10. Miss M. G. W., a white woman, aged 63, was a patient of Dr. C. M. Jones who has permitted us to report the following record of her case. She was admitted to the hospital on August 11, 1927.

This patient had always been in good health previous to the present illness. Through an error in the use of medicines both eyes were injured in infancy, causing partial blindness and finally resulting in enucleation of the right eye at twenty-one and complete loss of vision in the left eye at the age of twenty-eight. As a young woman she had two nervous breakdowns.

The present illness began in 1925 with digestive disturbances, fullness in the epigastrium, distress and nausea, without relation to meals. At times she vomited easily and recently has had, upon leaning forward, distress along the right costal margin accompanied by a pinching and pulling sensation.

On physical examination she was of short stature and obese, but no other significant findings presented except that the right eye had been enucleated and the left showed scarring, with the cornea nearly completely destroyed.

The red cell count of her blood was 4,500,000, white count 7000, hemoglobin 90 per cent. Three stool examinations were negative for occult blood.

The following is the report of the x-ray examination by Dr. G. W. Holmes on August 16, 1927: "There is distinct delay in the passage of the barium meal through the lower end of the esophagus, and retention of the barium in the cardia. Gradually the

lower portion of the stomach filled and appeared to be normal in outline and peristalsis. A good sphincter and first portion of the duodenum were seen. With the patient lying on the back a projection of the stomach could be seen to rise over the diaphragm close to the esophagus. This appearance was demonstrated repeatedly and no doubt represents a hernia of the stomach through the diaphragm which reduces itself when the patient is upright or lying on the face. The cecum and colon were not remarkable. The appendix was seen, movable and not tender."

The patient was instructed to follow a simple low residue diet, and to lie in the prone position after meals.

She was again admitted to the hospital in March, 1933. In the last few months her digestive disturbances had increased and there was more frequent occurrence of the distress felt along the right costal margin on leaning forward. Six weeks ago she had an acute attack of upper abdominal cramp-like pain radiating to the left shoulder blade. The pain was severe much of the time for five days. She did not vomit, but had anorexia, and was constipated during that period.

She has been weak, her chief complaint now being easy fatigability. During the last four months she has lost fifteen pounds, her weight being 150.

On examination she was still obese, and her color indicated the presence of moderate anemia. At the base of the left lung posteriorly there was slight dullness, diminution of tactile fremitus and breath sounds, and a few medium moist râles. The heart was negative, the blood pressure 120/60. There was moderate distention of the abdomen with some right upper quadrant tenderness.

The red cell count was 4,400,000, the hemoglobin 50-55 per cent. The differential count was normal but the red cells showed achromia with some change in size and shape. Tests for occult blood in the stools were positive in five specimens and negative in six.

A repetition of the x-ray studies by Dr. Holmes revealed the following: "There are calcified spots at the left apex. The lung markings are thickened and beaded throughout the chest. In the left lower lung field, partially hidden by the heart shadow, there is an area of increased density which is about 5 cm. in diameter, rather round with sharply defined margins; this is apparently just outside the left border of the herniated stomach in the posterior part of the chest, and may be due to a localized collapse of the lung from pressure. A review of the films taken in 1927 shows a suggestion of this same shadow. The patient was given a drink of barium meal which showed a definite delay at the cardiac orifice and a displacement of the esophagus to the right; the esophagus above the cardia showed a slight dilatation, and peristalsis was visible within it. The hernia previously described was still present and slightly larger. The stomach was normal as far as could be made out. Heart measurement from 7-foot film as follows: R 4, L 8, T 12, L 11.5, B 9, Gr V 7, Chest 21."

Symptomatically she was improved after eight days in bed and was again sent home to continue a low residue diet and large doses of iron. She is to report later with the possibility of having a phrenic neurectomy done.

PATHOLOGICAL FINDINGS

AUTOPSY NO. 6682, CASE 3.

The postmortem was performed one and a half hours after death.

The body is that of a well-developed, short, stocky, obese white woman apparently of the stated age, seventy-four years. The body length is 60 inches and the weight approximately 155 pounds. The subcutaneous fat is abundant, measuring 3 cm. over the abdomen, and grossly negative.

Peritoneal Cavity and Hernia: On opening the peritoneal cavity, it is found to be essentially normal except that only a small part, 1 cm., of the cardiac end of the stomach and 4 cm. of the distal pyloric end of the stomach are visible. The cardiac end makes a relatively acute turn cephalad and passes through an opening in the diaphragm in front and slightly to the right of the esophageal opening. This opening is filled by the first portion of the stomach on the left, the pyloric end on the right, and the great omentum in front and between the two portions of the stomach. With a comparatively small amount of manipulation the stomach is displaced from the sac and can easily be placed in a normal position within the abdomen. On examination of the opening through the diaphragm, it is found to measure 5 cm. in diameter. The hernial ring is made up of thin white fibrous tissue which is very tough and does not contain any recognizable muscular fibers. There is no muscle tissue visible between the anterior boundary of the ring and the portion of the diaphragm described as the central tendon. Bounding the opening medially is the inferior vena cava, posteromedially the aorta, and posterolaterally the esophageal opening. The esophageal opening is at its normal level, being tilted somewhat anteriorly, about thirty degrees from the usual position, at its opening into the stomach. The hernial sac is shaped somewhat like an inverted pear, extending above the diaphragmatic opening for a distance of 13 cm. into the posterior mediastinal space. The widest part of the sac measures 6 cm. in diameter and in the collapsed state the upper end reaches a point just below and behind the bifurcation of the trachea. It is found anteriorly and also somewhat to the left of the bodies of the vertebrae, behind the pericardium in the region of the left portion of the posterior wall of the right auricle. On the left side the sac has partially separated the anterior and posterior layers of the ligamentum latum pulmonis causing a posterolateral curve in the descending limb of the thoracic aorta. The right boundary is within the mediastinum and does not cause any visible bulging into the right pleural cavity. The sac is thin, measuring 1-2 mm., and is easily dissected from the surrounding mediastinal fat. On opening, it is found to be mesothelial lined and directly continuous with the parietal peritoneum.

By removing the heart and opening the upper two-thirds of the anterior wall of the sac by a vertical incision, it is possible to study the relationship of the esophagus, which is found to course down posteriorly and somewhat to the left of the vertical central line of the sac in the mediastinal space. The esophagus is not attached to the sac and is not shortened. On opening the esophagus there is one moderately distended vein apparent on the posterior wall in the lower third, and the mucosa appears normal.

Stomach: There are no adhesions on the external surface of the stomach. Four centimeters from the pylorus is a slight but definite ridge-like band around the stomach representing the line in relation to the edge of the hernial ring through the diaphragm. On the anterior and posterior serosal surfaces along the lesser curvature are found several relatively large vessels paralleling the long axis of the stomach. There are no similar vessels noted distal to the ridge. On opening, the stomach is found to contain approximately 300 cc. of coffee-ground material, giving a strongly positive guaiac test. There is a distinct difference between the mucosa above and below the point of constriction. The entire proximal portion has a pinkish appearance and the surface is diffusely sprinkled by small injected areas, measuring up to

2 mm. in diameter. This is most marked in the cardiac region. The distal portion has a normal gray appearance. There is no evidence of ulceration or erosion of the mucosa.

Intestines: Are somewhat pale but grossly negative. There is no evidence of erosion of the mucosa.

Microscopic examination of the organs is essentially negative except for the typical arteriosclerotic changes seen in the kidneys, and evidences of beginning bronchopneumonia. The histologic sections from various portions of the stomach fail to show any adequate cause for the presence of gross blood in the cavity of the organ. There are no erosions of petechiae and even the congestion of the portion contained within the sac, which was so evident in gross, has become relatively inconspicuous by the process of fixation and sectioning. Examination of the bone marrow shows a moderate hyperplasia of the erythroblastic series.

AUTOPSY No. 6694, CASE 9.

Autopsy performed seventeen and a half hours after death.

The body is that of a well-developed obese white woman of apparently the stated age, seventy-nine years, weighing approximately 150 pounds and measuring 65 inches. There is a recent upper right rectus incision measuring 20 cm. in length, from the center of which protrude several cigarette drains exuding a moderate amount of bile-tinged material. There is an old lower mid-line suprapubic scar 15 cm. in length.

Peritoneal Cavity: On opening the peritoneal cavity, the great omentum is found plastered around the recent operative wound and to the region of the gallbladder bed by delicate fibrinous adhesions. There is no evidence of free fluid or blood in the peritoneal cavity. On exploration of the stomach the entire cardiac end, fundus, and approximately two-thirds of the body are found in a hernial sac within the mediastinum above an opening just anterior to the esophagus. This opening in the diaphragm is somewhat semilunar in shape, with the concavity posteriorly, partially curving around the lower end of the esophagus at the point where it passes through the diaphragm. It easily admits three fingers in addition to the included portions of the stomach and measures 6.5 cm. transversely and 2.5 cm. anteroposteriorly in the region of the esophageal opening. The aorta and the vena cava pass respectively behind and through the diaphragm in normal fashion and are not involved in the hernial orifice. On examination of the hernial sac it is found to be a direct continuation of the parietal peritoneum of the abdominal cavity extending cephalad into the posterior mediastinum to a level 2 cm. below the concave undersurface of the arch of the aorta and just behind the left bronchus. In the collapsed state, with the stomach removed, the sac is rather uniform in size, being only slightly expanded superiorly and only slightly constricted at the point where it passes through the diaphragm. The transverse diameter is roughly 6 cm. in the upper region and also in the lower region just above the ring. Completely surrounding the sac is a thin layer of mediastinal fat. The termination of the esophagus at the usual esophageal opening is normal. However, the first portion of the stomach opening is tilted somewhat anteriorly and the posterior wall of the cardiac end is found adherent by firm fibrous adhesions to the posterior wall of the sac directly in front of the lower end of the esophagus for an area 1 cm. in diameter. With the exception of this small adherent area, the entire stomach can easily be removed from the hernial pouch and returned approximately to its normal position in the abdomen. On examination of the esophagus from behind after the thoracic and abdominal organs are removed in toto, it is found to course down slightly to the left of the center of the hernia and entirely outside the sac. Dissecting out the muscular bands of the two crura, it appears that the hernial ring is formed by a separation of these two structures at the place where they normally pass in front of the esophageal opening. The result is that thin muscle bundles intermingled with fibrous bands can be seen near the anterior and lateral margins of the opening.

Esophagus: On opening the esophagus, the mucosa shows early postmortem degeneration. There are no apparent dilated vessels.

Stomach: The stomach contains approximately 150 cc. of light yellowish material with no evidence of blood. The mucous membrane, particularly in the region of the fundus, is streaked with a great many slightly dilated vessels. Along the posterior wall of the first portion of the body are a few scattered small injected areas measuring up to 3-5 mm. in size. The remaining portion of the mucosa is negative except for a small, soft, non-ulcerated, pinkish-gray somewhat pedunculated polyp measuring 1 cm. in length and 4 mm. in diameter in the region of the greater curvature of the body of the stomach.

Intestines: There are innumerable diverticula throughout the large bowel, the largest measuring 2 x 2 x 1.5 cm. There are also approximately fifteen small, soft, pinkish-gray pedunculated polyps in the pelvic colon.

On microscopic examination, the stomach shows marked postmortem degeneration of the mucosa. There are no apparent pathological lesions of the remaining vessels in the submucosa and musculature.

DISCUSSION

A consideration of the case histories of this series makes it clear that clinical findings alone may be insufficient to establish a diagnosis of this type of diaphragmatic hernia. The most conclusive means of diagnosis lies in adequate fluoroscopic examination. When diaphragmatic hernia is discovered by this means and anemia is not a concurrent finding, all such patients should be examined from time to time with reference to the presence of bleeding. The history may contain no reference whatever to disorders of the stomach, or gastric symptoms may be secondary to the presence of gallstones. Six of our ten cases fall into this group, Cases 1, 2, 3, 5, 6 and 9. Case 9 came under observation because of cholecystitis due to gallstones. The hernia in Case 6 was discovered by x-ray after a clinical diagnosis of gallstones had been made. Case 5 had had an operation for gallstones prior to our observations. Case 7 had had a cholecystectomy for gallstones thirteen years previously. Cases 1, 2, 3 and 5 had symptoms attributable only to anemia, and especially emphasize the importance of examining the stools for occult blood when the cause of the anemia is not obvious.

Among other symptoms worthy of special note are the following:

In Case 6 there is mentioned a curious symptom of sudden occurrence, described as "slipping of a rib" in the left lower chest, felt only

on stooping over and suggesting, in view of the known diaphragmatic abnormality, a rapid squeezing of the stomach through the dilated esophageal ring. In Case 10 a similar symptom occurs, referred to the right costal margin.

In Case 7, while the principal symptoms were due to anemia there was a complaint of a sense of constriction of the esophagus and of substernal distress after eating. Similar complaints appear in the record of Case 4. Healy[8] mentions substernal distress as a prominent symptom and Dr. G. W. Holmes[9] believes this particular pain is due to acute dilatation of the esophagus when the cardio-esophageal orifice is temporarily obstructed.

In Case 8, striking attacks suggesting cardio-esophageal obstruction occurred repeatedly over a period of four years. These may have been associated with temporary rotation of the stomach or may have been due to simple cardiospasm. They were not accompanied by substernal pain. Posture also played a rôle in producing distress felt across the upper abdomen.

The one outstanding lead to the proper clinical diagnosis is a history of repeated attacks of anemia such as occurred in Cases 2, 3, 5 and 7. In Case 2 such a history had been present for fifteen years and probably for a longer time in Case 7. These attacks, with periods of good health intervening, are simulated only by the anemia due to intermittent bleeding hemorrhoids. It is clear also from the notes in Cases 5, 6 and 8 that bleeding may occur for short periods from time to time without causing a notable anemia. The blood findings are those of simple secondary anemia unless bleeding is profuse enough to modify the white cell and blood platelet picture characteristic of active hemorrhage.

The cause of the intermittent character of the bleeding is unknown at present. It could be accounted for on the hypothesis that there may be varying degrees of incarceration or torsion of the stomach, but we should expect the development of symptoms not usually present if such events occurred. We do not know whether the stomach may remain in its normal position below the diaphragm for long periods, thus relieving congestion, but in view of the difference in pressure above and below the diaphragm this also seems unlikely. In connection with this problem Fineman and Conner[10] have reported the case of a twenty-two year old man who had been treated for pernicious anemia for a period of seven years, in whom they found a diaphragmatic hernia of the short esophagus type. In this instance it appears probable that the portion of the stomach above the diaphragm must have been fixed permanently in this position. Changes in the capillary walls incident to age might be a factor in some cases, but if such changes led to bleeding we should expect oozing of blood to be constant. Furthermore the cases reported in infants and young adults could not be explained on this basis. Hypertension may exert a direct influence on bleeding as in Case 4, but the most persistent oozing of blood in any patient of this series occurred in Case 2 in the absence of hypertension. In Case 7 hypertension could have been a factor only in very recent years. Möller[11], who reports a case of diaphragmatic hernia complicated by a primary carcinoma of the stomach, discusses various possibilities which might account for chronic bleeding in the cases in which ulcer or cancer cannot be demonstrated, and concludes that such bleeding cannot occur without demonstrable pathologic-anatomic lesions of the mucous membrane of the stomach. On the whole it is remarkable that greater changes than we have found in our autopsy material should not be in evidence. No simple explanation appears sufficient to account for the intermittent character of the blood loss.

In view of the postmortem findings in two cases, the failure to find cause for bleeding in three cases on thorough abdominal exploration, the absence of x-ray findings with reference to ulcer or cancer, and the fact that bleeding may occur without the intervention of any dramatic episodes in the history suggesting acute strangulation, we assume that bleeding in all of the cases in this series had a common cause, venous congestion. Doubt has been expressed that hemorrhage in any considerable amount may occur from multiple pin-point foci in the mucous membrane of the stomach, but the point is well known to pathologists since it is observed frequently, for example, in cases of cirrhosis of the liver. This process was well visualized at the time of the postmortem examination in Case 3. It is also known that under such circumstances histologic evidence of changes in the gastric mucosa may not be apparent. Our autopsy evidence offers no explanation for the bleeding in these cases except venous congestion caused by increased venous pressure.

The autopsy findings in Case 9 in one respect are inconclusive. The examination was made too long after death to detect the presence of small areas in the mucosa which might have oozed blood as in Case 3. The nature of the gastric contents makes it certain that bleeding had not occurred during the last day or so of life. The small polyp described was so insignificant in appearance that it might well have been overlooked in a less careful examination of the stomach. It is significant, however, that no ulceration or erosion was found and no varices had developed.

We deduce from the operative and postmortem results that the mechanical handicap to the stomach as a result of herniation is not so great as might reasonably have been expected. Ulcer

and erosion of the mucous membrane may occasionally develop, but presumably in the great majority of these cases nothing more than simple congestion of the mucous membrane and some enlargement of the veins in the walls of the stomach will be found.

Our experience suggests that all patients having congenital or acquired herniae of the stomach through the esophageal orifice of the diaphragm should be regarded as potential subjects of anemia due to blood loss.

TREATMENT

In the presence of severe anemia and so long as blood is present in the stools the patient should be kept in bed. The diet should be of low residue, balanced, and simply prepared. The low residue diet is suggested as a means of reducing gastric motility to a minimum. Iron in the form of Blaud's pills or iron ammonium citrate, grams IV-VI, should be given daily. It is not necessary to administer iron subcutaneously. Liver is a useful item in the dietary, but is not now regarded as an essential part of the treatment for the type of anemia under consideration.

Much has been written about the operative treatment of diaphragmatic hernia, but analysis of the papers on the subject indicates that surgery is useful principally in cases of traumatic hernia through the diaphragm and in certain emergencies rarely occurring in cases of the type under discussion here. There is, however, one procedure advocated by Bakes[12], Harrington[13], and Overholt[14] which may be applied with benefit and little risk, i.e., phrenic neurectomy. Immobilization of one leaf of the diaphragm by means of this procedure should promote some relaxation of the esophageal ring, and absence of diaphragmatic motion would tend to lessen suction effects. Hedblom[15] believes that this procedure would be of little benefit when applied in cases having a hernia through the esophageal hiatus, because the amount of motion at the hernial site is small and there would be little relaxation of the muscle ring. Not enough cases have been done to enable us to judge the clinical results following neurectomy, but the operation should not be discarded on a priori grounds. We regret not having had it done in certain of our cases. In occasional cases repair of the hernia should be attempted when attacks of pain, chronic gastric distress, or uncontrollable bleeding occur.

SUMMARY

Ten cases of hernia of the stomach through the esophageal orifice of the diaphragm associated with bleeding in the absence of ulcer are reviewed. Autopsy findings in two cases are recorded, as well as the operative findings in three other cases. It is shown that congestion of the mucous membrane of the stomach, presumably caused by increased venous pressure, is the cause of the bleeding. The treatment is indicated.

The authors are indebted for their coöperation to the physicians and surgeons whose names are mentioned in the case histories. We are also grateful to Dr. George A. MacIver, Superintendent of the Worcester City Hospital, for his permission to use the autopsy room of that institution for the autopsy in Case 3.

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EXTENSION OF PREVENTIVE MEASURES IN ADULT LIFE*

BY WILLIAM H. ROBEY, M.D.†

IT has been said by various state and city boards of health that the practitioner of medicine in any branch shows little interest in preventive medicine but centers his attention upon the physical signs and treatment of declared disease. Teachers of the science of disease and of public health admit a considerable degree of discouragement in directing the thoughts of the present undergraduate toward a watchfulness of the perfectly well man who may show the potentials of disease which if allowed to continue probably will in time change him from a well into an ill man. The doctor is somewhat

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hampered by the failure of the public to offer him sufficient opportunity to make physical examinations of healthy individuals, but the public is very slowly learning the importance of the routine physical inspection. In this they are instructed by lectures, magazine articles and those physicians who are sufficiently imbued with this important and necessary part of our work to take the time and interest to search regularly for possible defects which if allowed to remain lay the foundation for subsequent pathology.

When a patient takes the trouble to visit us while he thinks that he is in good health and asks for a complete physical examination we may be sure that he has been impressed with the importance of such a step and will be unsatisfied if he has to leave with only a casual inspection or a statement from his physician that he knows him so well that an examination is unnecessary. I have known of instances where patients have been sent out of doctors' offices with one or both of these dismissals, and I feel that therapeutic medicine and preventive medicine have lost opportunities which might have been far-reaching. The harm done by such action is even more extensive than the mere loss to the individual, for his reaction to our neglect is communicated to others who in turn spread the news that after all the search for potential illnesses is not highly regarded by those who should have their possibilities most in mind. Some two decades ago laymen in various parts of the country began to establish organizations for routine physical examinations, and hospital staffs established diagnostic clinics and the fact that they have flourished proves their need and their appeal. I am not critical because we all realize the absorbing interest for the clinician in diagnosis, treatment, convalescence and prognosis. The kaleidoscopic changes of disease activate his mind and leave small opportunity to search for pathological premonitions. Furthermore, decade upon decade have stressed the importance of disease in all its aspects and until recently little has been said about the part which every physician should play in the recognition of those factors which herald the future onset of a malady. They have been left more to the specialist in preventive medicine and public health. Now Boards of Health in various states and cities are making strong appeals to practitioners to coöperate in their work, especially with children. This is important not only to reduce further mortality of the earlier years but to prevent the effects of childhood diseases in later life. Medicine today in common with many other organizations is passing through a revolutionary period the outcome of which no one can see and it behooves us to make every part our own, for if preventive medicine is added to the care of illness the practice and usefulness of the physician will be increased two-fold.

Gradually the span of life has increased from thirty, a hundred years ago, to fifty-eight at the present time and a hope has been expressed that it will in a reasonable time be extended to sixty-five but many believe that the average limit will be sixty years. Longevity depends partly upon good inheritance and partly upon environment, but we must not overlook the importance of building a firm foundation in the early years to withstand the ravages of the later ones. Our chief objective is to prevent and limit so far as possible in early life the infectious processes which add to cell atrophy and corresponding interstitial fibroses and thereby reduce the hazard in middle life of meeting, in a crippled condition, infections and the stress of years. Tissues must pay for years of life, and senescence is as physiological as growth. Some time ago a lady came to my office full of the joy of living and on the brighter side of middle life. Evidently she had heard of death for she suddenly exclaimed that she thought it a great pity that anyone had to die. When I asked her how we would get food and adequate shelter if no one ever left the world her expression showed that such an idea had never entered her head and once there did not meet with her approval. To those in the second and third decades when infectious diseases and foci of infection are leaving their scars on vital organs and systems, the sixtieth year seems so remote as to be beyond consideration, but when that line has been passed if they do not enjoy bodily and mental health, life becomes a void. As Talleyrand said years ago, "Everybody wants to live long but nobody wants to be old." Our duty to the young is then of first magnitude if we are to lighten their burdens of the closing years and our own task as well. The majority, indeed the great majority, of infants are born with perfectly normal organs and if the parentage is reasonably good the outlook would be good were it not for infections and accidents. The latter are numerically small and hardly within the province of the physician so we will turn our attention to disease. If the various organs upon physical examination shortly after birth are normal we may assume that the infant is ready to start upon his career. I am afraid that many infants are delivered and discharged if they cry normally and present a healthy appearance without further thought from their physicians unless they are called to see the ill infant or child, if he has reached that stage of his development. I am also afraid that he is treated for the illness in question without a careful consideration of the potentialities of disease and advice to the parents about their correction. The prompt segregation of infectious diseases is well understood by the modern physician but he must be very positive if he is to expect thorough coöperation on the part of other members of the family. The old idea that it is just as well for all the children in the family to have the disease at the same time and

so be through with it has nearly passed, especially among educated people. Scarlet fever and diphtheria may be mild in one child and severe in another, but mild or severe they may leave their scars. Fortunately the worst sequel, a damaged endocardium, is rare in these infections, occurring in only one per cent or even a little less. If the heart fails during their course it is usually due to an overwhelming toxemia and if it carries through to convalescence it generally escapes without injury, but there is always the risk that it may not escape and a burdened after-life result. Measles is often considered a harmless disease, but such is not always the case. It may end in pneumonia or precipitate tuberculosis. The incidence of the latter disease is reduced but the figure is still much too large. Sickly children, unexplained fever, repeated colds, should be investigated by chest x-ray plates since percussion and auscultation may be entirely negative. Prompt action gives us the best chance for recovery and often prevents an entire change in the adult's career.

Rheumatic fever is of paramount importance. It is rare before the end of the second year although an occasional case has been described. It occurs most commonly in the second decade. Haven Emerson's statements are illuminating when he asserts that when rheumatic fever completes its cycle from onset through a period of disabling symptoms to and through the time of decompensation, all under the age of forty (which occurs in the great majority of cases) we find that the onset is under ten years of age in 19 per cent of the cases, between ten and twenty years of age in 37 per cent, between twenty and thirty in 23 per cent, and between thirty and forty in 21 per cent. On the average, four years elapse between onset and cardiac disability, which continues in varying degrees for about seven years before decompensation and with it probably complete disability develops which continues for about four years until death. Mitral stenosis, the common lesion of the rheumatic group, is the usual basis for cardiac failure in young persons. The infections of early life doubtless play a considerable part in the cardiac degenerations of middle life quite apart from syphilis. When there is not an endocardial lesion many of us believe that the muscle may become involved, the circulation to the heart muscle limited and the basis laid in middle life for cardiac failure or coronary disease. Winternitz and his associates have been working recently to prove the truth of this cause. In the first decade most often the picture differs from the later periods. The joint symptoms are of much slighter character while the cardiac lesions are much more pronounced and frequent. Growing pains, or pain in the thigh or calf, should be taken as seriously as pain or swelling of the joints. Vague sore throats, attacks of tonsillitis, peritonsillar abscesses, nervousness and irritability quite apart from definite chorea, which is a distinct part of the rheumatic fever complex in children, should never be passed over as of little importance. The rheumatic nodule, another significant symptom better studied by the English and German physicians than those in this country and much more common in children than adults, is being described more frequently by hospital physicians in this country because they have searched for it. The nodules have been found with chorea without other clinical evidence of rheumatism. Much study has been given to the bacteriology of rheumatic fever, but notwithstanding the work of Poynton and Paine, Swift, Small and many other investigators the specific organism has so far eluded us. Apart from bacteriology it is interesting to note the work upon the methods of infection and the areas involved. Swift explains that if it is possible to assume that the submiliary nodule of Aschoff represents mainly the proliferative response of the tissues to implantation of a bacterial body or some particulate product of such bacterial body, then it can be readily understood how such an exudative response as edema might occur at some distance and lead to distinct clinical symptoms. The occurrence of such an exudate which might appear and disappear could easily give rise to the varying changes in the electrocardiograph seen in a single patient during the course of rheumatic fever. Likewise it may cause the transient appearance of heart block during the active stage of rheumatic fever or it may be responsible for various murmurs which disappear after the fever has subsided. For this reason one should not hurry into a diagnosis of cardiac pathology until after all physical signs have entirely disappeared. The reason why endocarditis is so often a sequel of rheumatic fever in young persons is that the blood vessels of the valves are much more vascular in young life and therefore give an opportunity for bacteria or their products to be carried to and implanted upon the endocardial tissues. Unexplained fever with vague symptoms, perhaps pain in the stomach, nausea, vomiting, or epistaxis may all be indicative of rheumatic fever in a child. Clinicians must bear in mind that the symptom-complex of rheumatic fever may appear in almost any order. Sometimes a tonsillitis and a heart lesion may precede a polyarthritis or the order may be reversed. Rarely a purpura or erythema multiforme will show before the other signs. I shall not take up at this time the much discussed question of focal infection. It is enough to say that in spite of much contradictory discussion I still regard infected tonsils and teeth as the cause of many cases of rheumatic fever in young persons. I have already related elsewhere our experience with tonsillitis and with tonsillectomy as a pre-

ventive measure. At least two things have been learned from these studies, one that tonsils are often allowed to remain until they have established secondary foci in other parts of the body, and, secondly, that many tonsillectomies are failures because the enucleation is attempted by persons who are not sufficiently trained in the performance of this major operation. We have also learned that rheumatic fever can be stopped in well-selected cases by performing tonsillectomy during the height of rheumatic fever without harm to the patient. This we have done repeatedly when medical measures have failed. Public hospital statistics will never give us a true estimate of tonsillectomy as a preventive in rheumatic fever because the operation is done in many instances by members of the house staff upon a large number of patients not thoroughly studied. Information of value can be obtained only from private patients operated upon by thoroughly trained laryngologists.

Infected teeth are also a source of rheumatic fever and of cardiac infection although not in the same degree as are infected tonsils. Even in middle-aged adults I have seen angina pectoris and cardiac inefficiency relieved by the removal of infected root canals. While a certain number escape from focal infections without serious harm, the possibilities of tissue damage are great and we should not take the chance. It is impossible to state why all persons hypersensitive to streptococci do not have rheumatic carditis, nor are we able to determine why scarlet fever does not always produce nephritis, or even why certain streptococcus scarlatinae infections do not have a rash, but the existence of a state of hypersensitiveness to streptococci can account for many of the known features of the disease.

Syphilis is another infectious disease particularly damaging to the central nervous and circulatory systems. While not so common in private practice, especially with the better class of patients, it is still seen to a considerable degree in dispensaries and hospitals. Its early recognition is of great importance and every physician should be acquainted with the dark field illumination method of the examination of scrapings from the initial lesion. While cases are reported of rapid advance to the damaged lesions of the third stage, the majority experience the deleterious effects of the infection fifteen to twenty years after the onset of the initial lesion. It is unfair to assume that every initial venereal sore is syphilis because that places a burden upon some individuals who go through life without proof of the infection.

Those who have reached twenty or thirty with good physical backgrounds have then a considerable number of years in which to exercise their talents but even in and from this period the routine physical examination will keep the physician informed and the patient safeguarded. It will establish mutual confidence, but the patient's faith will be shaken if the tests are not thorough and impressive. Modern medicine has passed the point of only looking at the tongue and feeling the pulse, and the public is well acquainted with the fact. During this period watchfulness of weight and circulation is important, knowing the predisposition of the obese to diabetes and circulatory changes.

Oliver Wendell Holmes once said that if you want to live to be eighty you must have an illness at twenty; and, at another time, that if you desired long life you should be very careful in the selection of your grandparents. Care and heredity make for longevity. As we advance in age the causes of death become quite different from those of the young years. The effects of infections and environmental exposure in old age show a steady decrease. We all see instances of blood stream infections in the elderly producing bronchopneumonia, bacterial invasion of the heart, or renal fatalities but these more readily cause death by lowered resistance and impaired reparative powers and are ingrafted upon tissue changes often long existent. More often the old die from results of cell changes in vital organs or systems due to wear and tear of life, to improper living,—or they are hurried to the end by tissue alterations acquired long before. Recently Barker has stated that nearly half of our old people die from diseases of the circulatory system (cardiac failure; arterial disease; cerebral hemorrhage); about one-eighth from diseases of the respiratory system (especially pneumonias); about one-eighth from cancer; one-twelfth from renal disease; one-fifteenth from diseases of the digestive system and the rest from accident, suicide and undefined diseases. When patients come to us with any declared chronic disease not amenable to complete removal by surgery we become at once engaged in a losing fight in which the disease is eventually the victor. I do not mean, of course, that we are unable to render many important services which will add years of usefulness and comfort, but I do mean that the greater the delay in making our discoveries the less the opportunity of a favorable course. Although there are unfortunately some cases of arterial degeneration which advance to angina pectoris and coronary occlusion without premonitory signs, the majority have some indication long before the more serious break occurs. History is as important, sometimes more important, than physical signs. While certain symptoms impress the patient sufficiently to cause him to dilate at length upon them, others of far greater importance are never mentioned because they are considered of little moment. I have known a man to visit his physician, give his history, take his physical examination but never

mention the fact that for a year he had been awakened once or twice a night with air hunger. The doctor heard the satisfactory history, found a reasonably good physical condition but forgot or neglected to inquire about the man's sleeping hours. A few weeks later the patient collapsed on a train during a trip in the West and died after a few days. Now his relatives and friends are blaming the doctor not for his death but for permitting a very ill man to go so far away from home. The physician is an able and experienced man and made the kind of mistake any of us may make, but we can't afford to have it happen often. So afraid am I of it that I have these questions printed on my history cards. That helps us to cover points quickly which the patient would be unlikely to mention. My friend, the late Dr. Bolles, advised a patient to walk more and thus increase his exercise. "Why," said the man, "I don't believe I can as I am a postman." One of my colleagues told a young man with abdominal pain directly after breakfast that he should be removed at once to a hospital for an appendectomy. Whereupon the patient's brother asked the doctor why that should be and taking a bottle from a closet shelf showed the doctor his brother's appendix. The reason for these comparatively simple mistakes is obvious. Some patients take the attitude that it is the doctor's business to get their histories and they don't tell anything unless they are asked about it.

In the course of the physical examination there are many findings too numerous to mention in a brief paper which in themselves suggest lines for questioning and investigation. Examples of these are the arrhythmias, especially those occurring in middle-aged individuals, and the various forms of tachycardia, sometimes suggesting hyperthyroidism. There are various nervous disorders, some organic and others purely functional, which should not be accepted by a physician unless he is willing to expend a considerable amount of time and energy in their solution. Making up one's mind that a condition is functional and treating it lightly because of such a conclusion is sometimes disastrous. One of my older medical friends, a man of great ability, told me that he was convinced that a certain woman had merely a phobia which took the form of abdominal discomfort. Repeated examinations had been negative, until one day she complained of greater pain than usual but the doctor's mind, being closed to an organic defect, entirely missed a ruptured infected tube which produced peritonitis and death in a short time.

At the present time we have the opportunity to vaccinate well patients against the respiratory infections, and I know of a considerable number of physicians who do this. I, for one, am a strong believer in the good which may come from such a practice. Vaccination against typhoid fever is also an excellent procedure. In 1919, immediately following the World War, we had the lowest incidence of typhoid fever which this country has ever known because over two million men at the age of greatest susceptibility to typhoid fever were thoroughly vaccinated in the army. Typhoid fever has diminished to such an extent that it is sometimes difficult to show a case to a class of medical students. It is essential to vaccinate patients who are going on trips, especially to Europe, the far West, or who are going to summer in rural districts. It is my belief that this form of vaccination is not used so much as it should be.

What is a physical examination? Surely not an inspection of only the organ which the patient believes at fault. A cardiologist who merely examines the heart will often fail to make a correct diagnosis. Sometimes the complaints far exceed the physical findings but it is well to give the patient the benefit of the doubt and make our search thorough. When I was a house officer we had a man on our service who had a new complaint every morning when I made my rounds, for which no physical reason could be found although the examinations were thorough. At last I concluded that the man was a malingerer, but when I stated my belief to the visiting physician he cautioned me to be careful because he suspected general paralysis and advised a neurological consultation. This was held the next day and among other tests the man was given a sheet of paper and requested to write "God save the Commonwealth of Massachusetts." He sat on the side of the bed and after several trials produced something which the neurologist attempted to interpret as a plea to the Almighty. The neurologist having signed the consultation slip "General Paralysis" went out of the ward gravely shaking his head. That afternoon the patient's wife, a neat little Irish woman, came to the hospital for the first time and I interviewed her. I said, "Have you noticed any change in John's handwriting recently?" "His handwriting?" said she, "He has never been able to read or write." "Has he always taken good care of you?" I asked. "Sure, I've supported that man for twenty-five years, taking in washing and ironing." John had his clothes the next day and I hope was soon able to make the fire for his hard working wife's ironing.

In the army camp where I was stationed during the early part of the war a middle-aged officer had charge of a ward. As he never did any work nor showed records of any physical examinations, I visited him one afternoon for the purpose of finding out what he could do if made to examine his patients.

After some laborious percussion a small circle appeared which represented his idea of the

cardiac area, and the liver began in the third costal space. When I asked him if the young soldier had a normal liver he replied in the affirmative. When I said that it was unusual in my experience to find a normal liver beginning in the third space, he said, "Well, you will always find it so down here in Alabama." So it was in his ward, even in soldiers coming from Maryland and Virginia. He was a gentleman but not a physician and since his services were useless in the army he was honorably discharged to the community where his ministrations were perhaps appreciated. He said that in Alabama his patients would lose their respect for him if he examined them, so, for example, if a man appeared with a sore toe he gave what he thought was good for that affliction and seemed not to care if it was due to trauma, epidermophytosis, diabetes or arterial disease.

As a rule when there is an apparent conflict between subjective and objective symptoms the latter should have the greater influence in determining the diagnosis. When two diseases are possibilities with apparently equal evidence in favor of each, the chances favor the commoner. A distinguished colleague of mine made many mistakes in his earlier years because he was so busy looking for the unusual that he did not see the common disorder. Again, we may have our minds so focused on a certain disease that we entirely overlook another of equal if not greater importance. Not long ago a physician for whom I have considerable admiration brought a patient to my office because she had hypertension and some cardiac inefficiency. These conditions were undoubtedly present and had received his undivided attention for a considerable length of time. When she was on the table I found a large uterine myoma which could be felt through the wall and was confirmed by pelvic examination. He could have found it as easily as I but his mind was centered on the heart and circulation, and so his chagrin was great.

Without physical examination clinical medicine lacks foundation. If there is any pleasure in the practice of our art, it is in knowing why we institute a form of treatment. Taking a drug may give the patient some satisfaction for a time at least, but there is very little for us unless we know what we are doing. A pharmacist once told me that he always knew when a detail man had been visiting the physicians in his community, because the prescriptions for his particular drug began to come in immediately.

Some years ago abdominal surgeons operated for a diseased condition which they suspected and not finding it closed the abdomen—the patient still suffered or died. With improved methods a little time is taken to look for other pathology although the diseased tissue has been excised. So with a negative cardiac pathology other causes of pain or breathlessness may be discovered. I have known house officers—quite sure of themselves—who have found a negative physical examination upon the patient's entry to the hospital and, although the suffering and appearance of illness continued, the search for new signs was not repeated.

Probably most doctors keep notes of their examinations, and if not how are they able to tell when a new physical sign appears? A card with printed headings will assure a record of important data.

Sir William Osler once said to a group of physicians, "Our study is man, as the subject of accidents or diseases. Were he always, inside and outside, cast in the same mould, instead of differing from his fellow man as much in constitution and in his reaction to stimulus as in feature, we should ere this have reached some settled principles in our art. And not only are the reactions themselves variable, but we, the doctors, are so fallible, ever beset with the common and fatal facility of reaching conclusions from superficial observations, and constantly misled by the ease with which our minds fall into the rut of one or two experiences."

ESTRIN THERAPY IN A CASE OF HEMOPHILIA*

BY ROBERT L. BROWN, M.D.,† AND FULLER ALBRIGHT, M.D.†

OVARIAN substances have been employed sporadically in the treatment of hemophilia. As early as 1904 Lachlan Grant[1] reported a case which was given extract of ovarian substance of sheep apparently with some improvement in symptoms. In 1909 Sir Almroth Wright[2] stated that "it might be worth while to administer ovarian extract to male bleeders with a view of endowing them with the mysterious physiological advantages which, in bleeder families, attach to the female sex". Hynek[3] in 1923 reported the clinical cure of seven cases of hemophilia under corpus luteum extract treatment. Niehans[4] in 1930 described the transplantation of calf's ovary without corpus luteum into the abdominal muscles of a hemophiliac with a consequent drop in coagulation time.

Interest in the subject was revived by Birch[5] in 1931 when she reported the treatment of two cases of hemophilia with ovarian extract resulting in clinical improvement. Later in the same year[6] she found the urine of hemophiliacs to be deficient in female sex hormone while that of normal males contained enough to produce the estral cycle in castrated rats. In her latest publication[7] Birch reports a good response to

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ovarian therapy in nine of nineteen patients receiving ovarian preparations over a period of more than six months. Her patients showed a decrease in the number and severity of hemorrhages and a lowering of the coagulation time in some cases to normal. She used "theelin, corpus luteum, and whole ovarian substance by Armour and Wilson and Lederle, and a number of other preparations". Best results were obtained with whole ovarian substance. The conclusions of Birch find support in the work of Kimm and Van Allen[8], Foord and Dysart[9], and C. E. White[10].

The inference from the work of Birch is that some hormone of the ovary exerts the beneficial influence, although a non-specific effect is not ruled out. It would seem wise, therefore, in attempting to establish the effect of hormone treatment in hemophilia to use relatively pure substances in contrast to whole ovary preparations. Furthermore, there are two hormones made by the ovary, estrin and the corpus luteum hormone. The latter presumably is made only after puberty and so, since women do not at any time suffer from hemophilia, it would seem unlikely that it has any influence. Therefore, in the case to be reported, only preparations of estrin were used.

The study was conducted as follows: The coagulation of venous blood from an undoubted case of hemophilia was determined during a control period and then after graded doses of estrin. Clotting was observed in 8 mm. glass tubes by the method of Minot and Lee[11]. The urine was collected in 24-hour specimens, both before and after institution of therapy and assayed for estrin by the method of Kurzrok[12]. The preparations of estrin used were progynon (Schering Corporation*) and theelin (Parke, Davis and Company*).

The patient, A. W., was a 42 year old married American barber who had a history of bleeding on many occasions since infancy. Hemorrhagic manifestations included profuse bleeding from superficial cuts and abrasions, joint hemorrhages, hematuria, two retroperitoneal hematomas, extensive subcutaneous hemorrhages, and bleeding from the gastro-intestinal tract. The patient's brother bled to death at an early age from a superficial wound, and two male relatives on his mother's side of the family had symptoms very suggestive of hemophilia. The patient entered the hospital because of a severe gastro-intestinal hemorrhage. His condition demanded immediate transfusion and he was given 500 cc. of citrated blood and a second transfusion three days later with complete cessation of hemorrhage. Clotting time before transfusions was markedly prolonged. Bleeding time was normal and platelets were not decreased. Four days after entry, clotting time was two hours. On the eleventh day after admission the control

*The authors take this opportunity of thanking the Schering Corporation and Parke, Davis and Company for supplying the hormone.

Day	Time	Therapy: Progynon By Mouth Units	Therapy: Progynon Subcut. Units	Therapy: Theelin Subcut.	Coag. Time	24-Hour Assay of Estrin in Urine
10/6/32	4:30 P.M.				2 hr. 8 min.	
10/7/32	4:30 P.M.				2 hr. 10 min.	
10/8/32	4:50 P.M.				2 hr. 22 min.	
10/9/32						0-5
10/10/32						40+†
10/11/32						18
10/12/32	9:50 A.M.				3 hr. 47 min.	
	10:20 A.M.	150	25			
	10:50 A.M.				3 hr. 37 min.	
	11:10 A.M.	150	25			
	12:00 N.				3 hr. 45 min.	
	2:00 P.M.	150	25			
	5:05 P.M.				2 hr. 5 min.	40+
10/13/32	10:00 A.M.	300	50			
	2:00 P.M.	300	50			
	4:00 P.M.				2 hr. 19 min.	
	6:00 P.M.	300	50			54+
10/14/32	10:00 A.M.	450	75			
	2:00 P.M.	450	75			
	3:00 P.M.	450	75			
	5:00 P.M.				3 hr. 0 min.*	51+
10/15/32	10:30 A.M.			100		
	12:00 N.			150		
	3:45 P.M.				3 hr. 43 min.*	480+
10/21/32	3:00 P.M.				3 hr. 45 min.	

*It is of interest to note that on both these occasions there was slight trauma in obtaining the venous blood at the first trial, and readings of 12 minutes and 20 minutes were obtained instead of 3 hours and 3 hours and 45 minutes.

†The plus mark indicates that rats were positive with all dilutions used.

series of blood and urine determinations was begun. Coagulation time of venous blood taken on four different days during the following week showed a variation of from 2 hours 8 minutes to 3 hours 47 minutes. It was therefore clear that the effect of the transfusion on the coagulation time had worn off. Immediately after blood for the last control was taken, the patient was given 150 rat units of progynon by mouth and 25 units subcutaneously. Venous clotting time one-half hour later was 3 hours 37 minutes, or essentially the same as before medication. An hour after the first dose 175 units more were given in a similar manner. Clotting time was not affected. Three hours later a third 175 unit dose was given. Venopuncture following this was accompanied by tissue trauma which may account for a drop in clotting time to 2 hours 5 minutes, though this figure is within the range of variation noted in control readings. On the following day double the original amount was given in three doses, a total of 1050 units. Clotting time was 2 hours 20 minutes. The next day a triple dose, 1575 units, was administered and clotting time was three hours. On the fourth day five ampules, 50 units each, of theelin were given subcutaneously in two doses. Clotting time three hours after the last injection was 3 hours 43 minutes. A final determination one week later showed a venous clotting time of 3 hours.

Clotting time of capillary blood from ear puncture as determined by noting time required for coagulation in a 1 mm. capillary tube was 4 minutes, except for one occasion on the first day when it rose to 8 minutes. Bleeding time was 2-3 minutes at all determinations, except on the first day when it was 5 minutes and on the second day when it was 6 minutes. Rough estimation of platelets from a stained blood smear revealed no gross changes in their number. A summary of results is given in the table.

The urine assays for estrin are of interest from two points of view. In the first place, before therapy this patient was excreting considerable amounts of a substance (possibly male sex hormone), which produced estrus in castrated female rats. This is contrary to the findings of Birch for hemophiliacs (v. supra). Secondly, after treatment the excretion of hormone was increased far beyond that found in normal women, so there can be no doubt that adequate dosages were employed.

In conclusion, we feel justified in stating that the presence of estrin in the blood stream, presumably in amounts far greater than that found in normal women as judged by the urinary excretions, did not in itself alter the coagulation time in a case of hemophilia.

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ARTIFICIAL PNEUMOTHORAX

"A History of Artificial Pneumothorax in America," which will run in five installments, begins in the September number of the *Journal of the Outdoor Life* (National Tuberculosis Association). The series is by a well-known physician who has spent more than three years in gathering and compiling the material.

The comparatively recent rise of surgery in the treatment of tuberculosis has focused the attention of both tuberculosis specialists and of general surgeons on this method. The series of articles traces the history of the use of artificial pneumothorax from the very first mention of this method of treatment in America, made in a communication written by Dr. Daniel McRuer in 1835 and published in the *Boston Medical and Surgical Journal*. Naturally, much stress is laid on the paper read by Dr. John B. Murphy of Chicago in 1898 at the Denver meeting of the American Medical Association. The unfortunate conflict on priority between Murphy and Forlanini is also discussed and the strange lapse of interest for a decade following the death of Lemke, Murphy's associate, in 1904, is graphically recited. The author then comes down to the more recent developments during the first two decades of the present century and brings the history to the present time.

Copies of the *Journal of the Outdoor Life* for six months, beginning with the September number, may be secured through the National Tuberculosis Association, 450 Seventh Avenue, New York City, by advance subscription of 50 cents.

VERMONT STATE MEDICAL SOCIETY

NORMAL LABOR*

BY N. W. PHILPOTT, M.D.†

IN the words of Professor Chipman: "If it is important to be in the world at all, and most of us think it is, surely the matter and the manner of our entrance are of a first consideration."

Fifty years have passed since many basic principles were established by Sir Halliday Croom, the powerful pioneer of obstetrics in Scotland. Yet, while we all may agree with his dictum that parturition is a physiological process, it is evident that the requirements of our civilization have made childbirth increasingly more difficult. Modern social customs have tended to make this process less physiological.

Every year, in the United States, over 20,000 women die as the direct, or indirect, result of childbirth. There are also many thousands who are severely but not fatally injured. According to authorities the chief causes of disaster are the terrible three: eclampsia, hemorrhage, and puerperal infection. Two-fifths of all maternal deaths in registration areas are due to puerperal infection. This type of infection, in most cases, is due to the lack of obstetrical cleanliness. By maintaining a more stringent, aseptic technique most of these deaths would be prevented. Not only would we lessen mortality figures, but we would also see the puerperium less complicated.

From the years 1925 to 1929 there were 10,000 women who were confined in the Royal Victoria Maternity Hospital. The gross maternal mortality was .46 per cent, and the fetal mortality five per cent. Though figures can be made to tell any story it is interesting to analyze these cases.

There were 7,684 mothers, healthy at the onset of labor, who delivered themselves spontaneously. Of these only three women, or .03 per cent, were lost at the time of delivery or during the puerperium. In these cases there was a fetal mortality of 260, in other words 3.3 per cent.

The remaining 2316 cases were women who of necessity had an operative delivery. The maternal mortality in this group totalled 43 or 1.8 per cent. Fetal mortality was correspondingly high, being 239 or 10 per cent.

The woman in a normal state of health at the onset of labor, and who is able to accomplish a spontaneous delivery, has a much brighter future. She also stands a much better chance to obtain a healthy, living baby. I heard an older doctor, who practises far from help in northern Quebec, once say, "You know, I think myself very fortunate if the baby is born before my arrival, because the woman seems to do so well afterwards." This is in part true; no doubt, we are sometimes apt to do too much. But, though the normal case is the ideal type there is also the complicated one which demands a divergence from the normal treatment, and an operative delivery is essential.

Each year there are nearly 3000 women confined in the obstetrical service of the Royal Victoria Maternity. Most of these individuals are delivered in the hospital, but there are from 300 to 500 delivered in their own homes. A regular routine with few variations is maintained. I will attempt to describe as clearly and as simply as possible this management of the case in labor.

Labor consists of three stages.

"When her days to be delivered are fulfilled" the woman experiences painful uterine contractions which are accompanied by dilatation of the cervix. She is said to be in "labor." False pains frequently mislead. But in this case there is *no* cervical dilatation.

The duty of the doctor in attendance is to see, and to examine his patient at the beginning of this first stage. It is understood that he has seen her at frequent intervals during the pregnancy. If the doctor, or any other person in attendance, has any infection such as a "cold, infected finger, a boil, etc.," it is taken for granted that he or she will *not* conduct a case in labor. At this time the doctor makes sure that the general state of health of the patient is good, and that she is free from every form of infection. More in particular he palpates the abdomen, diagnoses the presentation and position of the fetus, and he hears the fetal heart. This is the time to be sure that the presenting part either is engaged in the pelvis, or that it will engage without difficulty. A rectal examination will usually make one positive of this fact, but if there is any doubt, a vaginal examination under aseptic conditions should be made. The patient has the lower bowel well emptied by means of a soapsuds enema, and the vulva is shaved and well washed with green soap, sterile water and a solution of biniodide of mercury (1-4000). The blood pressure is taken, and the urine is examined.

At this stage the patient is usually more happy if she is allowed to walk about. Only if the breech presents, or if there is some abnormal presentation is it necessary to keep the patient in bed, thereby to retain the sac of amniotic fluid

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so long as possible. When she is walking about, the descent of the fetus is facilitated, and the pains are usually more effective. At this time, in our country, whisky 1 oz. will frequently relieve pain, and the most excitable patient will usually become quite placid and resigned to her pains. Perhaps this therapeutic measure will be more widespread after November 8. Later, morphia grs. 1/6 can be given to relieve pain, and to preserve physical strength; this is not repeated in less than four hours.

Those in attendance make sure that:

(1) The patient in labor uses only a sterilized bedpan, and that she does *not* use the toilet frequented by others. She is not in the same room as an "infected" case, and that all forms of contamination are strictly avoided.

(2) Light nourishment and fluid intake are encouraged. Urinary output is carefully checked at frequent intervals; often progress of labor is hindered by a full bladder, and sometimes urinary suppression occurs without being detected until many hours have elapsed. Careful record of amount is charted.

(3) The fetal heart is listened for, at least every half hour in the first stage.

When the cervix is completely effaced and dilated, the patient enters the second stage of labor. She now experiences "bearing-down pains" and should be allowed to use them. The doctor should be constantly present.

An inhalation anesthetic is now given, but in light dosage. In our opinion nitrous oxide is preferable, otherwise chloroform or ether. During this stage the fetal heart is determined every ten minutes, and sedatives are never given.

Scrupulous care is the rule regarding asepsis and antisepsis at the time of delivery. All persons present wear a mask to cover the nose and mouth. The operator is fully gowned, wears a cap, mask, and sterile gloves.

The patient is put in the lithotomy position, and the vulva is again cleansed with green soap, sterile water, and solution biniodide of mercury. She is then draped with sterile towels, over lower abdomen, each leg, and under the buttocks.

She is ready for delivery.

If the perineum does not stretch readily an "episiotomy" is always done. The mediolateral, or "the five o'clock" type is routine on our public service.

Birth of the baby is the passing from the second to the third stage of labor. Masterful inactivity should be the rule. It has been said, "Postpartum hemorrhage is never the fault of the patient." The fundus is guarded and not allowed to fill with an excessive amount of blood. Placental separation occurs usually in ten to twenty minutes. It must not be hurried. When the obstetrician is satisfied that separation is complete it can then be expressed. Pituitrin and ergotamine tartrate are given to aid the contraction of the uterus. In my opinion, neither drug should be given until after the fetus and the placenta have left the uterus. The bladder is completely emptied.

Steadfast is the rule that the patient remains on the delivery table for one hour following delivery; the doctor is still present.

There are undoubtedly some perplexing problems. For that reason I will very briefly discuss a few points of interest.

(1) Preparation of the patient:

Many periodicals have recently published articles regarding the use of mercurochrome to sterilize the vaginal and vulvar regions. In a series of 400 cases, 10 cc. of mercurochrome in glycerine were instilled into the vagina at the time of admission; this was repeated at the time of delivery, and the vulva was well painted with the same solution. A control series of 400 cases treated only with green soap and sterile water gave practically identical results regarding morbidity, foul lochia, and complications during the puerperium.

(2) Lowered resistance of the mother:

We are all agreed that the woman during pregnancy or during the puerperium is much more susceptible to any form of infection. The virulence of this infection is always more pronounced. For this reason no woman at the time of delivery should be unduly exposed to infection. Our results have greatly improved since we have removed every patient having any form of infection from the common delivery room or ward. They are segregated in a "Septic Ward." Periodic throat cultures are taken from every nurse and doctor on the staff; no "carrier" is allowed in the case-room or ward.

(3) Fetal distress:—In the first stage when the fetal heart is irregular, excessively fast, or slow, the administration of morphia will give the baby a chance to recuperate. If the fetal heart drops below 100 per minute in the second stage, delivery of the baby should be considered. The presence of meconium, especially in the undiluted form, is a danger signal. Most authorities agree that it is not an "absolute sign" of distress. But if this is accompanied by changes in the rate of the fetal heart, distress is absolute.

(4) Maternal distress:

Recently we have found that the woman who is in labor over a long period of time is greatly benefited by the intravenous injection of five per cent glucose saline, about 300 cc. in amount; fatigue is relieved, and the labor pains assume a much more effective character. In the case of extremely long labor, or in any other where operative procedure has been extensive it is most advisable to give the woman a blood transfusion; also it is taken for granted that excessive loss of blood should be replaced. This is given to best advantage within the first few hours following delivery. We are of the opinion that this prophylactic measure has averted

many a severe case of sepsis in the puerperium. Since we have adopted this measure the incidence and virulence of the infections have been markedly less.

(5) The undilated cervix:

One should never forget that the undilated cervix is always to be treated with respect, "It is the guard of the gate" and when present delivery should not be attempted except for some very urgent reason.

(6) Morale of the patient:

The mental attitude of the patient plays an important part. She should be frequently encouraged and reassured. The husband should also be reassured because "while we have never lost a father" many have come very near the edge. Their fears are many.

Sir William Osler was known chiefly as a physician, but he added to his many achievements one, and only one, obstetrical case. During his first years of practice in Montreal he attended a family in a medical capacity. They were very satisfied, called him frequently, but never offered to settle his bill. As time progressed the daughter was successfully married, and soon afterwards became an expectant mother. Pressure was brought to bear and his services were constantly sought; he was loathe to take this case because his liking for obstetrics was not great, and in addition, remuneration from that source was conspicuous by its absence. However, he at last consented.

The course of the pregnancy was uneventful until two weeks before the expected time when, one night, a burglar entered their home. As he was leaving through the window the expectant mother wakened, and saw him as he made a hasty exit. Great was the commotion, and speculation was high as to whether the child would be "marked". Nothing could be said to allay their suspicions and superstitions. Fortunately she began her labor a few days later.

The labor was long, but finally terminated. The doctor and nurse were with the patient behind closed doors. On the other side the husband could be heard pacing up and down the corridor.

Would his child be marked?

Finally the door opened and the doctor appeared. Quickly the husband approached, and nervously demanded, "Is my baby marked?" "Yes," answered the doctor, "it is marked C. O. D."

In conclusion we can say that if we are successful in lowering the incidence of maternal and fetal mortality, if our children are of finer physique, our mothers more capable wives, and our husbands more contented, surely the matter and the manner of our entrance are of a first consideration.

SURGICAL DELIVERY PER VAGINA AT TERM*

The Posterior Occiput

BY GERALD C. MELHADO, M.D.†

UNDER the above title many procedures suggest themselves:

1. Vaginal Hysterotomy.
2. High, mid and low forceps.
3. Version and Extraction.
4. Breech Extraction.

Two of the most common difficulties one has to deal with, are breech extractions and deliveries of the occipitoposterior. It was therefore considered more advisable to deal somewhat fully with one difficulty, than simply, in the time at my disposal, the many.

1. Breech presentations and occipitoposterior positions occur in our clinic in almost equal percentages. The fetal mortality is about the same, but many times higher than is found to be the case in anterior positions of the vertex. Too often there is an associated maternal damage. For these reasons, I propose to confine my remarks to the occipitoposterior; because they constitute the most frequent cause of surgical interference in vertex presentations and are fraught with grave danger to the child and injury to the mother. An analysis of 4898 case records showed: vertex cases 3909, posterior occiput positions 368, anterior positions 2275, or an incidence for occipitoposterior of 1 in 13.4 labors. Whereas if vertex cases alone are considered, there is an incidence of 1 in 10.8 labors. Most authorities quote a high incidence for occipitoposterior positions, e.g., Williams 16 per cent. The gross fetal mortality for all cases, five per cent, includes macerated, non-viable, and monstrosities. While the gross fetal mortality for the 368 occipitoposteriors is four and three-tenths per cent, i.e., 16 fetal deaths in 368 occipitoposterior deliveries, exactly one-half of these fetal deaths were in spontaneous deliveries. The other half were in operative deliveries, i.e., by forceps. Of spontaneous deliveries there were 90 multiparae and 55 primiparae. There were 145 spontaneous deliveries with eight fetal deaths, or a fetal death rate of five and five-tenths per cent. In posterior position just as in anterior position spontaneous delivery is safer for both mother and child, but the watchword

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should be constant observation of the progress during the second stage. As soon as delay is present, its immediate cause must be determined and its correction effected.

The operative (forceps) deliveries numbered 223 with eight fetal deaths, or a fetal death rate of three and five-tenths per cent. The fetal mortality in the operative deliveries is less than that occurring in spontaneous deliveries so far as this series of cases is concerned. It may be stated that this series represents the two consecutive years, 1930 and 1931.

If a corrected fetal mortality is considered, the rate would be considerably lower. Especially is this true of the operative deliveries which are two and twenty-four hundredths per cent.

Operative 1 fetal death — mother eclamptic — child dead before attempt at delivery.
1 prolapsed cord—child dead before attempt at delivery.
1 placenta previa — bag induction — child dead before attempt at delivery.
1 spontaneous—dead born macerated.

If the analysis of this small series of cases counts for anything it calls, not so much for more operative procedures, but for what is far more important, i.e., constant supervision with careful estimation of the size and type of pelvis, correct diagnosis as to presentation, position and manner of engagement, and size of child—because occipitoposterior positions are almost constantly associated with large babies (3500 to 4000 Gm.). The muscular development is important, because these women are so frequently short, squat and overfat. Finally, the character of uterine pains—which are often irregular, with poor uterine contractions and pain more or less low down in the back and the legs, and slow dilatation of the cervix are almost pathognomonic of a posterior position.

A brief résumé of the probable causative factors and the mechanism may not be amiss.

1. Multiparity is said to be a predisposing factor—the pendulous belly due to a lax abdominal wall and uterine musculature allowing the child's back to fall to one or the other side and so carrying the occiput posterior, the normal attitude of the fetus being lost. Thus at the onset of labor, the head which in such cases is poorly flexed and occupies a position midway between flexion and extension, engages in one or other of the oblique diameters of the pelvis with the occiput behind.

If the primipara has the pendulous belly of the multipara, then the posterior position becomes a menace.

2. A contracted pelvis is another predisposing cause, especially the flat and generally contracted. The funnel type, although not primarily a cause, is a decided factor in the prevention of rotation when present.

3. The placental position may be a factor.

Mechanism: Engagement occurs usually in such a manner that the long diameter of the child's head is in relationship with one of the oblique pelvic diameters, more frequently the right oblique. Should flexion of the head readily occur, spontaneous rotation and delivery is the rule.

Failure of flexion is the most common cause of failure of rotation, thus necessitating interference.

There are four possible mechanisms to o.p.

1. Head becomes well flexed substituting the S.O.B. diameter for O.F., in which case rotation occurs anteriorly, 135° in the vast majority.

2. Imperfect flexion: occiput rotating to the transverse diameter of pelvis and becoming arrested.

3. Remaining persistently in the oblique diameter.

4. The occiput rotating into the hollow of the sacrum is due to two possible factors—(a) loss of flexion, the sinciput striking the pelvic floor on the opposite side and undergoing spontaneous rotation to the front swings the occiput into the hollow of the sacrum—the final mechanism being that of a "face to Pubes"; (b) the lateral contraction of the outlet (8 cms. or less, which is usually associated with a corresponding contraction between the ischial spines interferes with rotation and may favor rotation of the occiput into the hollow of the sacrum. This is especially true if flexion of the head is not well maintained.

Failure of Rotation—It is sometimes difficult to explain why anterior rotation fails to occur in a given case, but it may be stated that it is much more likely to occur (a) when the head is well flexed, than when imperfectly so, or partially extended. (b) Minor degrees of pelvic contraction—funnel type, especially when associated with imperfect flexion. (c) Relaxed or imperfect pelvic floor, the head remaining in an oblique or transverse diameter, until it reaches the perineum before rotation takes place.

Clinical Course—

In occipitoposterior positions the labor is usually prolonged. The pains are often irregular and poor, although the patient may complain bitterly of low backache and radiation down the thighs. The dilatation of the cervix is slow and may take days, a state of so-called primary inertia. The membranes frequently rupture early in the labor, or even before the onset of pains. Whenever such conditions are present the probability of an occipitoposterior position is almost a certainty. The slow dilatation of the cervix may in part be aggravated by the early rupture of the membranes, but it is not

the primary cause. It is frequently found that the head does not fit well down on the cervix on account of a poorly formed lower uterine segment—the cervix lying free beyond it "like a sail flapping in the breeze". When associated with minor degrees of disproportion the effect is more pronounced.

That the sympathetic nerve supply may be a real factor in the causation may be seen by the allied atonic condition of the bladder and bowel, frequent catheterization being necessary to empty the bladder.

The intestines often become distended so that the colon and even the stomach may readily be mapped out. Frequently the head remains high up longer, i.e., its descent is slower than in anterior positions, and even after rotation has begun, the uterine and abdominal pressure may be insufficient to accomplish the desired result. Spontaneous delivery in the occipitoposterior position requires the greatest effort on the part of the uterine and abdominal muscles, because the head traverses the pelvic floor with its greatest diameter, and is therefore prone to lead to extensive laceration.

The fetus is at all times in danger, because the prolonged first stage and interference with placental circulation greatly enhances the risk; while during the second stage the increased time necessary for the head to travel during its rotation as well as the danger of the head becoming arrested and, if uncorrected, becoming impacted, subjects the child to greater punishment than in anterior positions.

Given then a case in which the abdominal palpation early in the labor reveals the back of the child to be toward the mother's flank, the limbs more or less in front and on the opposite side, the head engaged in the pelvis, i.e., its biparietal diameter has passed the superior strait. What should be our attitude in such a case? Our principle is to observe the case closely, making frequent rectal examinations to determine the amount of cervical dilatation and descent of the head, at the same time remembering that little advancement of the head can be expected until the cervix is fully dilated and allowing the patient as much relief from pain as is compatible with safety of the child, and carefully watching the fetal heart. Following complete dilatation of the cervix, the advancement of the head, the character of the fetal heart and the condition of the mother's pulse must be the guide. Do not interfere so long as the head is advancing and the fetal heart sounds are good, but if the head fails to advance in spite of good pains, or if the child shows evidences of distress, interference is demanded, and we are certain that the earlier the interference under such conditions the better.

A careful vaginal examination and correct diagnosis of the position, the degree of flexion and descent of the head in the pelvis having been determined, the question arises whether any degree of disproportion, which may have been previously overlooked, is present. It is only by such means that the most suitable procedure can be adopted. If the head is found well down in the pelvis, attempts at manual flexion and rotation may be tried, but we have found that it fails more often than not unless the head is dislodged upward, before this maneuver can be successfully performed. It is then our practice to adopt one of the following procedures:

1. Pomeroy maneuver.
2. Forceps—Scanzoni or double application.
3. Forceps application and rotation of the occiput into the hollow of the sacrum delivering as "face to Pubes".
4. Or a procedure which I have not seen described anywhere in the literature.
5. This is done by completely dislodging the head, pushing it up to or near the brim of the pelvis, passing the hand behind the occiput and carrying the anterior shoulder forward if the back is found toward the mother's back. If not ignore the shoulder, but rotate the head from an oblique posterior position to the transverse diameter at the brim of the pelvis. In other words rotate the occiput so as to bring the sagittal suture in relationship with the transverse diameter of the pelvic brim. At this stage of the procedure the child's posterior ear lies in the palmar surface of the hand while the back of the hand rests on the promontory of the sacrum. The posterior blade of the forceps is then applied over the ear. The hand is withdrawn and the anterior blade gently passed over the child's face till it comes to lie directly opposite the posterior blade. In so doing the anterior blade thus passes beneath the bladder, but this need cause no undue anxiety as the entire application is done with the head completely out of the pelvis where there is plenty of room. The blades will then lock readily. The forceps is now rotated from a transverse to an oblique diameter—45°, thus bringing the occiput to the front. Gentle traction readily brings the head once more into the pelvis, and the ease with which the head descends into the pelvis and is delivered as an anterior position is extraordinary. The head usually descends in the opposite oblique diameter to that it originally occupied, i.e., if it was occupying the right oblique diameter as a R.O.P. it descends in the left oblique as an R.O.A.

The criticism to this procedure is (1) that one is doing a high or even floating forceps operation. This is by no manner of means so. True the application is done at or even above the brim of the pelvis, but the head was originally well down in the pelvis and moulded, to push

it up and bring it down in a corrected attitude cannot possibly make it the same as a high forceps operation, where the head never descended into the pelvis.

CONCLUSIONS

1. Operative procedures are necessary about three times more frequently in primiparae than in multiparae, whereas spontaneous deliveries occur one and a half times more frequently in multiparae.

2. The high operative incidence is associated with a comparatively low fetal mortality.

3. The somewhat higher fetal mortality in spontaneous than in forceps deliveries might be interpreted as demanding more operative deliveries, but this is not necessarily so. Rather should it be considered as requiring early interpretation of delay, especially in the second stage of labor.

Constant observation must be the watchword. As soon as delay during the second stage is present, its immediate cause must be determined and its correction effected.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

JULY, 1933

During the month of July, the following communicable diseases were reported to this Department: chicken pox 30, diphtheria 2, measles 88, mumps 67, scarlet fever 16, typhoid fever 2, undulant fever 1, whooping cough 96 and tuberculosis 5.

The Laboratory of Hygiene made a total of 1,637 examinations during July, classified in the following manner:

Examinations	for	diphtheria bacilli 57
"	"	Widal reaction of typhoid fever 23
"	"	undulant fever 29
"	"	gonococci in pus 147
"	"	tubercle bacilli 155
"	"	evidence of syphilis 419
	of	water, chemical and bacteriological 187
"	"	water, bacteriological 277
"	"	milk, market 229
"	"	milk, submitted for chemical only 0
"	"	milk, submitted for microscopical only 16
"	"	foods 12
"	"	drugs 0
"	for	the courts, autopsies 2
"	"	the courts, miscellaneous 32
"	of	animal heads for evidence of rabies 1
Miscellaneous examinations 49		
Autopsies to complete death returns 2		

Forty-two cases of gonorrhea were reported to the Division of Communicable Diseases and twenty-five cases of syphilis. Three hundred and sixty-three Wassermann outfits and 132 gonorrheal slides were distributed.

The nurses of the Infantile Paralysis After-Care Division saw 124 patients in their homes, two doctors were consulted, one patient was discharged from Audubon Hospital, one patient was discharged from the Children's Hospital, 19 new pieces of apparatus were fitted and 26 orthopedic corrections were made to shoes.

Fourteen towns were visited by the State Advisory Nurse of the Division of Maternity and Infancy, attending Mothers' Club meetings, Home Bureau meetings, Preschool clinics, holding children's clinics and assisting the Home Demonstration Agent. Eight hundred and eighty-one notifications of birth registration were issued and 370 pieces of literature were distributed.

UNSOUND ECONOMY IN PUBLIC HEALTH

New York, September 13—"Communities cannot afford to play fast and loose with their sanitary and health services. If they do, they may well run into difficulties fully as serious as the depression itself," said Dr. Louis I. Dublin, Vice-President of the Metropolitan Life Insurance Company and Past President of the American Public Health Association, in an address on the National Farm and Home Hour over the National Broadcasting System today. "Just before the depression set in, the country as a whole was investing about 120 millions of dollars a year for the preservation of the public health. This was equivalent to about $1 for each man, woman and child. The dollar covered the work of all agencies, whether of the Federal Government, the States, the counties or the municipalities and included the work of public as well as of private organizations. This amount, moreover, accomplished a fairly good job. It protected the community from contagion; safeguarded our water and food supplies; instructed mothers in the care of their children; provided for the medical inspection and health education of our children in the schools; supervised our cases of tuberculosis and managed a host of other activities which have become a part of the modern public health program. We could have done much more for the benefit of the people with $2 per capita than with $1. Such cities as Detroit, New Haven, Syracuse, and a number of others, did actually spend $2 and more and profited accordingly from their farsightedness. On the other hand large

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CLINICAL AND ECONOMIC FEATURES OF ARTHRITIS IN EX-MEMBERS OF THE MILITARY SERVICE*

BY PHILIP B. MATZ, M.D.†

(Continued from page 601, issue of September 21)

BLOOD PRESSURE

The normal average blood pressure of adults for all ages is said to be 127 millimeters of mercury systolic and 83.5 millimeters diastolic. The extreme normal limits for the systolic blood pressure in the adult at rest are 95 and 145. The diastolic blood pressure range in the normal adult is between 70 and 85. The pulse pressure varies normally in the adult from 30 to 60 millimeters of mercury.

Pemberton[1], in a study of 606 cases of arthritis, found that the tendency was for the blood pressure to be normal or below normal, high blood pressure being the exception rather than the rule. Low blood pressure, both systolic and diastolic, was found to a considerable extent in the atrophic type of arthritis. However, this observer found some of the lowest blood pressures in cases of hypertrophic arthritis.

Of a total of 434 ex-service arthritics on whom blood pressure observations were made, 143, or 33 per cent, had a systolic pressure between 120 and 130 millimeters; 97, or 22.4 per cent, had a systolic pressure between 130 and 140 millimeters; 82, or 18.9 per cent, had a systolic pressure between 110 and 120 millimeters. In the group as a whole, the highest systolic pressure was 210 millimeters; the lowest was 90 millimeters; and the mean systolic pressure was 126.5 millimeters. Of the group, 179, or 41.2 per cent, had a diastolic pressure of 80-90 millimeters; 144, or 33.2 per cent, had a diastolic pressure of 70-80 millimeters; 54, or 12.4 per cent, had a diastolic pressure of 90-100 millimeters. The highest diastolic pressure was 128 millimeters; the lowest was 50 millimeters and the mean diastolic pressure was 79.9 millimeters.

One hundred and seventy, or 39.2 per cent, had a pulse pressure of 40 to 50; 112, or 25.8 per cent, had a pulse pressure of 50 to 60; 71, or 16.4 per cent, had a pulse pressure of 30 to 40. In the group as a whole, the highest pulse pressure was 90; the lowest was 14; and the mean pulse pressure was 46.6 millimeters.

It was found that 80, or 18.4 per cent, of the group had a systolic pressure above 140 millimeters; 73, or 16.8 per cent, had a diastolic pressure of 90 or over; and 64, or 14.7 per cent, had a pulse pressure of over 60 millimeters.

From the data studied it may be concluded that in the majority of instances the systolic and diastolic pressure as well as the pulse pressure were within normal range, but that an appreciable number of patients of the group gave evidence of hypertension.

NUMBER OF ARTHRITIC ATTACKS

Chronic arthritis is ordinarily characterized by a long clinical course, consisting of periods of acute exacerbations and intervals of remission of the joint disease. The number of attacks experienced by 358 patients up to the date of this study varied from one to ten or more. Among 152 cases of hypertrophic arthritis 72 gave a history of one attack. Altogether these 152 patients had 407 attacks, or an average of 2.7 attacks per patient. Of 145 cases of atrophic arthritis 29 gave a history of three attacks. The group as a whole had 758 attacks, or an average of 5.2 attacks per patient. Of 29 cases of hypertrophic arthritis of the spine and pelvic joints, ten gave a history of two attacks. The 29 patients had 164 attacks, or an average of 5.7 attacks per patient. Of 12 cases of arthritis due to specific agents the largest group, eight in number, had two attacks. The 12 patients gave a history of 26 attacks, or an average of 2.1 attacks per patient. Of ten cases with rheumatic fever, the largest group, five in number, gave a history of one attack. The ten patients gave a history of 22 attacks, or 2.2 attacks per patient. Taking the whole group of 358 patients into consideration it was found that 106, or 29.6 per cent, gave a history of one attack, and 76, or 21.2 per cent, of the group gave a history of two attacks. The group of 358 patients gave evidence of having had 1419 attacks up to the date of this study, or an average of four attacks per patient.

DURATION OF ARTHRITIS

The pathological changes, which are present in the various types of arthritis, consist of disease processes of a chronic nature. This chronicity of arthritis is associated with periodic exacerbations and constitutes the clinical characteristic of the disease. W. C. Stoner[16], in a study of a group of 300 arthritics, found that the duration varied from a few months to thirty-five years. Among a group of 209 cases of hypertrophic arthritis the largest number, 124, gave a history of the disease for periods from ten to 15 years. Of 172 cases of atrophic arthritis, the largest group, 92 in number, gave a history of the disease for periods from ten to 15 years. Of 31 cases of hypertrophic arthritis

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of the spine and pelvic joints, 21 gave a history of the disease for periods between ten and 15 years. Of 14 cases of arthritis due to specific agents, five gave a history of the disease for less than one year; four from one to five years; and four from ten to 15 years. Of ten cases of rheumatic fever, nine gave a history of the disease for periods less than one year. Taking the whole group of 446 arthritics into consideration, it was found that 248, or 55.6 per cent, gave a history of the joint disease from ten to 15 years; 62, or 13.9 per cent, from one to five years; and 58, or 13 per cent, gave evidence of the disease from five to ten years.

The mean duration of the group of 209 cases of hypertrophic arthritis was 131.9 months; of 172 cases of atrophic arthritis the mean duration was 111.1 months; in five cases of combined atrophic and hypertrophic arthritis the mean duration was 167.2 months; in 31 cases of hypertrophic arthritis of the spine and pelvic joints the mean duration was 122.6 months; in five cases of atrophic arthritis of the spine and pelvic joints the mean duration was 121 months; among 14 cases of arthritis due to specific agents the mean duration was 53.8 months; and among ten cases of rheumatic fever the mean duration was 6.4 months. Of the whole group of 446 cases, the mean duration was 130.4 months.

An analysis of these data indicates that arthritis is a disease of chronicity. The cases constituting the subject matter of this study were hospital patients with arthritis, who in the majority of instances, were being treated for a recrudescence of the joint disease. It is anticipated that a large number of these patients will receive hospitalization in the future for the joint affection, or for a complication of the disease. The data above should, therefore, be considered as indicating the duration of the disease up to the time of this study.

PHYSICAL ACTIVITY

The physical activity of the patient is dependent upon the degree of disability, the type of arthritis, whether the joint disease is active or inactive, the site of the disease, and the character of the coexisting and complicating diseases.

In order to determine the extent of disability and resulting reduction of the physical activity due to arthritis, an examination was made of 447 patients of the group included in this study. Two hundred and twenty-nine, or 51.2 per cent, of those examined gave evidence of a slight limitation of physical activity; the physical activity of 143, or 32 per cent, was greatly limited; 60, or 13.4 per cent, of the patients were able to carry on ordinary physical activity; and 15, or 3.4 per cent, of the group of 447 patients were unable to carry on any physical activity, that is, they were bed patients.

In this connection it must be pointed out that the classification of the arthritic, based upon his physical activity, is dependent upon the stage of the disease during which the examination is made. If the patient is examined during the inactive stage it is possible that little or no physical impairment will be noted. On the other hand, if the examination is made during an acute attack, evidence will be elicited showing limitation of physical activity or perhaps a total inability to carry on.

PRINCIPAL AND SECONDARY DISEASES

Among the total group of 450 patients hospitalized for arthritis and coexisting disabilities, in 425, or 94.4 per cent, of the cases the joint disease was the principal or most important disability found during the hospital episode, while in 25, or 5.6 per cent, of the cases the arthritic condition was considered of secondary importance.

COEXISTING DISEASES

Frequently the coexisting condition is not related to the joint disease and does not have any adverse effect upon the arthritic process. On the other hand, in many instances the coexisting disease is a menace to the patient's health and active treatment must be directed against it. In a study by Stoner[16] of 300 cases of arthritis he found that 163, or 54.3 per cent, gave evidence of the presence of coexisting diseases; in 137, or 45.7 per cent, no evidence of a coexisting disease was present. Some of the more common conditions noted were obesity, cardiovascular diseases, infected teeth or tonsils, sciatica, synovitis, colitis, pelvic disease, infection of the urinary tract and diabetes mellitus.

In the study of the group of ex-service arthritics, it was found that of 450 patients, 400, or 88.9 per cent, had coexisting diseases. The principal conditions encountered were dental caries, tonsillitis, missing teeth, pyorrhea alveolaris, periapical abscess, sinusitis, hypertension, prostatitis, etc.

Altogether the 400 patients gave evidence of having 1118 coexisting conditions, or an average of 2.8 per patient. It is believed that a number of the coexisting diseases were either precipitating or predisposing factors in the etiology of the joint disease. Certain of the conditions were complications either of the arthritic disease or the infective focus causing the joint disease. A number of the conditions were in no way related to the arthritic process.

It is of interest that the cases of hypertrophic arthritis were found to have a larger number of coexisting diseases than did cases of atrophic arthritis. It is also of interest that dental caries was found to be more prevalent in hypertrophic arthritis than in the atrophic type of joint disease.

TREATMENT OF ARTHRITIS

Students of arthritis are of the opinion that the condition is a generalized disease with joint manifestations. Accordingly, the treatment of the disease, particularly in the early stages, should encompass the patient as a whole and not be directed mainly at the local manifestations, i.e., the joint disabilities.

The type of treatment of arthritis depends upon several factors, such as (a) the type of joint disease; (b) the age of the arthritic process, that is, whether the joint disease is incipient or advanced; (c) the stage of the disease at the time treatment is first instituted; and (d) the coexisting diseases and complications.

The therapeutic regimen used in a case is varied and should be directed at the joint disease, at the exciting or predisposing factor of the arthritic process, at the coexisting diseases, and at the deformities and sequelae of the joint disease. It is important that the treatment be instituted in the early stages of the disease before there is an extension of the arthritic process and before ankylosis or deformities develop. It is an established fact that the longer the period between the inception of the disease and treatment, the more difficult it is to obtain an improvement or a cure of the arthritic process.

In treating the joint disease it is important to ascertain the causative factors and, if possible, to treat these. If an infective focus is present to which the joint disease is attributed, particularly if the latter is in the incipient stage, it is important that it be treated or completely eradicated. If it is ascertained that dietetic indiscretions, such as overeating or the ingestion of an excessive amount of carbohydrate, are responsible for the joint disease, steps should be taken to eliminate such causative factors. In addition, it is necessary to treat the joint disease. As was previously stated, the type of treatment used is varied and depends upon the patient as well as the type of joint disease present. The objective, of course, is the cure of the joint disability but if this is not possible of attainment, then palliative measures should be resorted to.

In this connection it is important that the surgical removal of suspected etiological foci, such as those of the teeth, tonsils, gall bladder, etc., should be done only when in the opinion of the physician these foci are the probable cause of the joint affection. The indiscriminate extraction of teeth, the extirpation of tonsils, or the surgical removal of other organs or tissues without first establishing a definite relationship of such foci to the joint disease, may not react favorably upon the joint disease and may lead to unsatisfactory results and consequences.

In the hospitalization of 435 ex-service arthritics it was found that 1378 different forms of treatment were used, an average of 3.2 regimens per patient. The treatment of the arthritic process was instituted with the idea of eradicating the focus of infection, of treating the joint disease, and of prescribing medicinal agents which it was thought would have a beneficial effect on, and cause a cessation of, the arthritic process. Physiotherapy was used more frequently than any other therapeutic measure. This was followed in frequency by medicinal therapy, special diet, the removal of foci of infection, immobilization of the joint, colonic irrigation, and other regimens; certain of these were administered in combination.

RESULT OF TREATMENT

Pemberton[1], in the treatment of 185 civilian arthritics and 400 arthritics in the military service, obtained the following results: Of the army cases, 77 per cent recovered completely. Of the civilian cases, which included the most advanced types, 24 per cent recovered completely. Of the army cases only four per cent were unimproved as compared with nine per cent of the civilian group. It was Pemberton's opinion that these differences were to be expected in view of the more advanced age of the civilian cases and the greater chronicity of the joint disease. Omitting those cases which were only slightly benefited, 73 per cent of the civilian cases were definitely improved and of this number one-third recovered completely.

Stoner[16], in the treatment of a group of arthritics, found that 80 per cent were either cured or relieved of active symptoms. Van Breemen, in the treatment of 435 patients with joint disease by various methods, obtained recovery or improvement in 89 per cent of the cases.

Following the treatment of the group of 450 hospitalized arthritics, 342 or 76 per cent, gave evidence of improvement; 34, or 7.6 per cent were unimproved; 23, or 5.1 per cent were still under hospitalization at the time this study was conducted; in 50, or 11.1 per cent, of the cases the patient's condition was unknown; one patient died from a complication of rheumatic fever.

It would appear, therefore, that the result of treatment of arthritis is satisfactory in that it leads to a remission of the active joint disease. Unfortunately, the clinical history of arthritis shows that joint disease consists of periods of exacerbation and intervals of remission. These cases gave a history of a chronic course with a good deal of invalidism, disability, and impairment of earning capacity.

RELATIVE POTENCY OF VARIOUS FORMS OF TREATMENT

An attempt was made to evaluate the potency of the various therapeutic regimens used in the

treatment of arthritis. For this purpose a group of 262 patients was studied. It was found that much depends upon the type of the joint disease, the age of the arthritic process, and the stage of the disease when treatment was administered, as well as the type of coexisting conditions. Accordingly, one is unable to arrive at a definite opinion as to the therapeutic regimen which is most potent in the treatment of arthritis. However, one is justified in saying that the various regimens, either singly or in combination, had beneficial effects on the different types of arthritis.

EFFECT OF TREATED FOCI OF INFECTION UPON ARTHRITIS

In order to ascertain the effect on the joint disease of the treatment of coexisting foci of infection, the latter having been considered etiological factors of the arthritic process, a study was made of 111 cases.

The principal infective foci which were considered etiological factors of joint disease were teeth and gums, tonsils, sinuses, and prostate. It was found that the treatment of the infective foci in 111 patients resulted in 61 complete cures, 48 showed improvement, and two patients were unimproved.

Following the treatment of these foci of infection it was found that the joint disease was improved in 101 cases and in ten instances the arthritic condition was unimproved.

EFFECT OF UNTREATED FOCI OF INFECTION UPON ARTHRITIS

In order to ascertain the effect on the joint disease of coexisting untreated foci of infection, a study was made of a small group of 25 cases. It was found that 23 of the 25 patients gave evidence of improvement of the joint disease following hospitalization in spite of the fact that the infective foci remained untreated.

Accordingly, it may be inferred that the mere presence of a focus of infection does not necessarily mean that it is the etiological factor of the joint disease, or that it is likely to have a deleterious effect on the arthritic process. In this connection it is again desired to emphasize the fact that the indiscriminate extraction of teeth, the routine extirpation of tonsils, the surgical removal of other organs or tissues, with the idea of curing the joint disease, should be discouraged, unless one is assured that benefit will result from such surgical intervention, or unless the tissues are so badly diseased as to require surgical removal.

DISABILITY AND ECONOMIC LOSS FROM ARTHRITIS

While the mortality rate from arthritis and rheumatism in the United States is less than four per 100,000 of the population, the disability as well as the economic loss resulting from joint disease is of such magnitude as to require concentrated effort by both the profession and the laity in its prevention and cure.

Chronic arthritis is a very disabling disease, of marked chronicity. It is characterized by frequent recrudescences, and causes impaired earning power of its victims. In Berlin it is said to be the cause of three to four times more disability, requiring pension payments, than is tuberculosis. In Massachusetts disability from arthritis involves about 140,000 persons in contrast to 25,000 cases from tuberculosis. In Sweden 9.1 per cent of all cases causing "permanent pensionable invalidity" are due to articular rheumatism. In England in 1922 about 90,000 patients applied for medical advice for chronic arthritis; of these about 40,000 were severe cases, 25,000 of moderate severity, and 25,000 were early cases. In the larger New York clinics the consensus is that about 20 per cent of persons applying for treatment seek relief for arthritis.

Pemberton[1] states that during the World War arthritis was a cause of great suffering and loss of strength among the forces of all nations, and wide provision was made in Europe for the early treatment and after-care of these sufferers. In the United States forces there was an incidence at the time of the Armistice of 60,000 cases of chronic arthritis per year.

During 1915-1917 the Metropolitan Life Insurance Company made an extensive study of morbidity among 150,000 families, numbering 600,000 individuals; these were families of small means. Among 90 per cent of the population surveyed, 164.4 persons per 100,000 were reported as suffering from rheumatism. This condition accounted for nearly nine per cent of all cases of illness. Rheumatism and arthritis ranked second only to accidents, the latter causing about five per cent more disability. Of 1073 persons affected with rheumatism, the Metropolitan Life Insurance Company found that 133, or 12.4 per cent, were able to work; the rest were unable to work although not all were bedridden.

Another feature of the Metropolitan Life Insurance Company's survey was the long duration of illness from rheumatism. Dublin and Marks found that the cost of rheumatism to the country was tremendous. These workers found that the disease caused a loss each year of probably 7,500,000 weeks of work and a total annual cost in excess of $200,000,000. In England rheumatic disease is responsible for one-sixth of the entire industrial invalidity, necessitating an expenditure of approximately $10,000,000 a year for payments of sick benefit and a loss of working time amounting to 3,000,000 weeks a year. Among ex-service men affected with rheumatism and arthritis, it was found

that during the fiscal year 1931, 4899 had received hospital treatment for this disability by the Veterans Administration. The average hospital stay of these patients was 58.9 days. It was further noted that approximately 976 patients were under hospitalization by the Veterans Administration for rheumatism and various types of arthritis as of June 30, 1931.

Thirty-four thousand, three hundred and sixty-nine ex-service men received some gratuity in the nature of retired pay, disability allowance, or disability compensation during the fiscal year 1931 for disabilities resulting from arthritis. This number constitutes 6.4 per cent of the total number receiving disability compensation, disability allowance, or retired pay for all disabilities.

The annual cost of the above emoluments for arthritis was approximately $10,115,892, which represents 4.7 per cent of the total annual cost of all benefits authorized by the statutes. It must be understood that these figures do not include the number on pension status or the cost thereof.

DISABILITY AND DISABILITY COMPENSATION OR PENSION

Until the recently enacted pension law there were four Congressional enactments providing for the payment of veterans disabled as the result of arthritis. The World War Veterans' Act, 1924, as amended, allowed disability compensation for this and kindred diseases, if the disability from the condition had its inception during the period of the war or within one year after the veteran's discharge from the military service. The disability allowance provisions of the Amendatory Act of July 3, 1930, allowed eligible World War veterans an award for disability from arthritis, irrespective of whether it was service-connected or not. Veterans of the Spanish-American War could receive a pension for arthritis, the amount of pension depending upon the length of military service and the per cent of disability. Veterans of the Civil War were entitled to a monthly pension for arthritis, the amount depending upon the age of the veteran and whether he required the aid of an attendant.

Of the group of 450 ex-service men with arthritis, 155, or 34.4 per cent, were receiving compensation; 146, or 32.6 per cent, were receiving disability allowances; 29, or 6.4 per cent, were drawing pensions; and two emergency officers were receiving retired pay. In 22, or 4.9 per cent, of the group the disability allowance claim was pending; and in 96, or 21.3 per cent, of the total number the award was disallowed.

RATING OF DISABILITIES

Of 155 arthritics on a disability compensation status, the largest number, 80, were found to be temporarily and partially disabled; the next largest number, 41, were permanently and partially disabled. A study of the 146 veterans who were on a disability allowance status as the result of joint disease showed that the largest group, 62 in number, were disabled to the extent of 25 per cent; the next largest group, 40 in number, were disabled to the extent of 50 per cent. Of the 29 veterans who were receiving a pension for arthritis, 21 were pensioned for hypertrophic arthritis.

The total annual cost for disability allowance of the group of 146 ex-service patients was $36,576. The total annual cost of compensation in the case of 155 World War veterans was $97,963.92. The annual cost of pensions in the case of 29 veterans of the Spanish-American War and other wars and engagements was $19,044. The annual cost for retired pay in the case of two emergency officers was $3600. The total annual cost for disability compensation, disability allowance, retired emergency officers' pay, and pension for the group of 332 arthritics was $157,183.92, which was an average of $473.44 a year, or at the rate of $39.45 per month.

SUMMARY AND CONCLUSIONS

1. Of the 450 cases of arthritis and rheumatic fever included in this study 47.4 per cent were of the hypertrophic variety, and 38.2 per cent were of the atrophic variety. The rest of the number were classified as hypertrophic arthritis of the spine and pelvic joints, atrophic arthritis of the spine and pelvic joints, arthritis due to specific agents, and rheumatic fever. Several of the cases showed evidence of combined hypertrophic and atrophic lesions of joints. No case of gout was found in the group.

2. Among the cases of hypertrophic arthritis the vertebrae were most frequently affected. As the arthritic process spread and more joints became involved, the following combinations of sites were noted: the spine and shoulder; the spine, shoulder, and elbow; the spine, shoulder, elbow, and knee; and the spine, shoulder, hip, knee, and ankle.

Among cases of atrophic arthritis the knee joint was most frequently affected. As the disease process spread to other sites the following combinations of joints were noted: the knee and ankle; the knee, ankle, and hip; the knee, ankle, hip, and shoulder; and the knee, ankle, shoulder, wrist, and hand.

Of the group of arthritis due to specific agents the knee was the most frequent joint involved. Of the cases with rheumatic fever the ankle was the joint most frequently involved.

Altogether 1417 joints were affected in the group of 450 patients, or an average of 3.1 joints per patient. Considering the whole group of cases the following sites, in the order named,

were most frequently involved: knee, spine, shoulder, ankle, hip, wrist, elbow, sacro-iliac joint, hand, foot, and heel.

3. Of the total group but 79, or 17.6 per cent, gave evidence of an hereditary, familial, or a combined hereditary and familial history of joint disease. The largest number of the group gave an hereditary history; and the next largest number gave a familial history of joint disease.

The hereditary or familial tendency to joint disease was more prominent in atrophic arthritis than in the hypertrophic variety. In the small group of cases of rheumatic fever there was no evidence of hereditary or familial influence. In those cases in which there was an hereditary history the father was the member of the family most frequently affected. In the cases with a familial history the sister was the member of the family most frequently affected. In the cases with a combined familial and hereditary history of arthritis, the mother and sister were the members of the family most frequently affected with joint disease.

4. A large number of the group gave a history of one or more predisposing factors. The most frequent factors mentioned were undue exposure to prolonged chilling, undue exposure to dampness, severe physical and mental fatigue, trauma of joints, severe mental and nervous shock, and overuse of joints. These factors were present in both the atrophic and hypertrophic types of joint disease.

It was noted that traumatism was a predisposing factor in not only the hypertrophic variety but also in the other types of arthritis.

5. Of the group of 450 arthritics the largest number gave evidence of joint disease within the age group 30 to 35 years. The mean age of the group of hypertrophic arthritis was 31 years; of the atrophic type 28.9 years. The mean age of the whole group of 450 arthritics at the time of the onset of joint disease was 30.3 years.

6. The largest group of patients who developed arthritis gave evidence of overweight at the time of the inception of joint disease, and the next largest number were within normal range for their height and age. Twenty-one and four-tenths per cent of the 378 cases on whom this information was available, gave evidence of being below the standard weight at the time of the inception of the arthritic disease.

7. In the group studied there was no relationship of endocrine disturbance to the inception of arthritis.

8. A study of the 450 arthritics showed that but 5.3 per cent of the number gave evidence of some allergic manifestation. The data did not show that allergy was conducive to arthritis.

9. An attempt was made to ascertain whether there was a relationship of geographical environment to the inception of arthritis. For this purpose a group of 185 arthritics was studied and it was found that the largest number gave a history of the inception of arthritis while in France; the next largest number gave evidence of the onset of arthritis in certain of the North Central group of States.

10. The occupational data indicated that those occupations which are accompanied by exposure or by mechanical traumatisms may act as predisposing factors in the causation of the hypertrophic as well as atrophic arthritis. Some of these occupations are farming or ranching, occupations in which there is mechanical irritation, common labor, and mining.

11. In a study of the rôle played by focal infection in the causation of arthritis it was found that both in the atrophic and hypertrophic types of joint disease focal infection was a prominent antecedent factor. However, it was found that other factors, in addition to infective foci, contribute to the inception of joint disease.

12. The most frequent sites of the focal infections present in cases of atrophic, hypertrophic, and in the mixed types of arthritis were in the gums and teeth, tonsils, nose and throat, genito-urinary tract, sinuses, and intestinal tract; in addition, influenza and pneumonia were etiological factors of the arthritides. In most of the cases of rheumatic fever the antecedent infective focus was in the tonsils.

13. Sixty-seven and seven-tenths per cent of the group gave evidence of a loss of weight and 24.1 per cent showed a gain in weight following the onset and during the course of the arthritic disease.

14. The examination of the blood of the group of arthritics disclosed the fact that the total leukocyte count, as well as the hemoglobin per cent were, generally speaking, within normal limits; the erythrocyte count was also within normal range; the latter is not in accord with the findings of other observers who hold that arthritis is generally accompanied by a secondary anemia.

15. In the chemical analysis of the blood of the group of arthritics it was found that the various constituents were normal with the exception of uric acid and non-protein nitrogen; these were slightly increased in amount in a number of the group.

16. Blood pressure studies showed that in the majority of instances the systolic, diastolic, and pulse pressures were within normal range, but that an appreciable number of the group gave evidence of hypertension.

17. Chronic arthritis is a disease of long duration and consists of periods of acute exacerbation and intervals of remission. It was noted that among 358 patients the number of

attacks varied from one to ten or more. The largest group, 106 in number, gave a history of one attack, and the next largest group gave a history of two arthritic attacks. The largest average number of attacks (5.7), was present in cases of hypertrophic arthritis of the spine and pelvic joints; the smallest average number of arthritic attacks (2.1), was present in cases of arthritis due to specific agents. It is of interest to note that the average number of exacerbations in the group with atrophic arthritis was greater than that in the group with hypertrophic arthritis. Altogether, the group of 358 patients gave evidence of having had 1419 attacks up to the date of this study, or an average of four attacks per patient.

18. A study of the duration of arthritic disease in 446 of the patients of the group showed that the largest number gave a history of having had the disease for periods from ten to fifteen years. The mean duration of the joint disease for the whole group was 130.4 months. Inasmuch as a number of the patients included in this study will, no doubt, receive future hospitalization for the joint affection or for some complication, the figures are not final but indicate the duration of the arthritic process up to the time of the study.

19. The physical activity of patients with arthritis is dependent upon the stage of the disease, the type of arthritis, whether the joint disease is active or inactive, the particular joint affected, and also whether complications are present. It was found that the largest number of the group gave evidence of slight limitation of physical activity, and the next largest number gave evidence of greatly limited physical activity. Three and four-tenths per cent of the group were bed patients. On the other hand, but 13.4 per cent of the patients were able to carry on ordinary physical activity. Accordingly, chronic arthritis is associated with much disability, invalidism, and impairment of the earning capacity of affected individuals.

20. The coexisting diseases found in arthritis are of importance inasmuch as they may be exciting or predisposing factors in the etiology of the joint disease, or they may contribute to the prolongation or continuance of the arthritic process.

Four hundred arthritics of the group studied gave evidence of 1118 coexisting diseases, or an average of 2.8 per patient. The principal coexisting conditions were dental caries, tonsillitis, pyorrhea alveolaris, periapical abscess, sinusitis, hypertension and prostatitis.

It is of interest to note that the patients with hypertrophic arthritis had a larger number of coexisting diseases than did patients with atrophic arthritis. Dental caries, which was the most common coexisting condition, was more prevalent in patients with hypertrophic arthritis than in those with the atrophic type of joint disease.

21. Four hundred and thirty-five of the 450 patients with arthritis received various forms of treatment. The objective was the eradication of foci of infection, the treatment of the joint disease by physiotherapy, medicinal agents, and other therapeutic regimens, which it was thought might abort the arthritic process. Each patient received an average of 3.2 different forms of treatment. Physiotherapy was the most frequent regimen used. This was followed in frequency by medicinal therapy, special diet, the removal of foci of infection, and various therapeutic regimens in combination.

22. The treatment of the arthritics was followed by improvement in 76 per cent of the group; 7.6 per cent were unimproved; 5.1 per cent were still under hospitalization at the time of this study; in 11.1 per cent the condition of the patient was not reported; one patient died during the hospital episode from a complication of rheumatic fever. On the whole, it is believed that treatment of the group of arthritics was followed by satisfactory results.

23. A group of cases of arthritis with coexisting infective foci, to which the arthritic process was attributable and in which the infective foci received successful treatment, were improved following the hospital episode. A small group of arthritics with untreated infective foci, to which the joint disease was attributable, also showed improvement following hospitalization. Accordingly, the mere presence of an infective focus does not necessarily mean that it is the causative factor of the joint disease, nor does it mean that it may have a deleterious effect on the arthritic process. Extraction of teeth, extirpation of tonsils, or the surgical removal of organs or tissues should be resorted to only when these organs or tissues are badly diseased or when their continued presence may have a deleterious effect on the joint disease.

24. Thirty-four thousand, three hundred and sixty-nine ex-service men received some authorized benefit in the form of disability compensation, disability allowance, or retired emergency officers' pay during the fiscal year 1931 for disabilities caused by arthritis. This number constituted 6.4 per cent of all beneficiaries receiving such emoluments. The total annual cost of disability compensation, disability allowance, and emergency officers' retired pay for this group during the fiscal year 1931 was approximately $10,116,000. This amount constituted 4.7 per cent of the cost of similar allowances for all disabilities for the fiscal year 1931.

25. Of the group of 450 ex-service men with arthritis or rheumatism included in this study, 332 received a gratuity of some kind for disabilities resulting from the disease.

26. A study of the degree of disability and

the per cent of impairment of the earning capacity of arthritics receiving some form of gratuity for joint disease showed that the largest number were partially disabled. There were but 67 of the group of 332 beneficiaries receiving some form of gratuity who were totally disabled.

27. The total annual cost for disability compensation, disability allowance, emergency officers' retired pay, or pension for the group of 332 arthritics was $157,183.92, an average of $473.44 per year, or at the rate of $39.45 per month.

28. It was noted that beneficiaries with hypertrophic arthritis were more disabled and received a larger monetary allowance than those with atrophic arthritis. The highest pay was received by cases of combined hypertrophic and atrophic arthritis; the lowest pay was received by beneficiaries with rheumatic fever.

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UNSOUND ECONOMY IN PUBLIC HEALTH

(Continued from Page 638)

areas, especially in the rural sections of the country, spent very little, often only a few pennies per capita.

"With the beginning of the depression, cuts in budgets began until I estimate now that there has been altogether a reduction of about 20 per cent.

"The amount of budget cutting has varied considerably from place to place. New York State fortunately has maintained its service practically intact. The Governor has made it known that he will not permit this important social service to be impaired. Other states have not been quite so fortunate either in their financial resources or in the public spirit and vision of their executives. A number of them have cut their health budgets from 30 to 50 and more per cent. Thus, the State of Mississippi which in 1931 spent $526,394 for its State health service was compelled to reduce its budget to $130,000 in 1933. A similar picture can be drawn for a number of other places. The southern states have as a group been particularly hard hit with the result that large numbers of their professional personnel have been released, including physicians, nurses and other sanitary officers. Many County Health Units in these states have either been altogether eliminated for the lack of resources or have had their personnel reduced to the barest minimum. The few years of the depression have in large measure undone the work built up to safeguard the public health during the last 15 or 20 years in a large number of states.

"As a result of a questionnaire sent to a group of 108 large cities only a few months ago, we discovered that since 1931 the average per capita expenditure for public health has dropped from an average of one dollar to 81 cents. The most disturbing feature of this picture was the fact that the greatest reductions occurred in many of those cities which in 1931 were recognized as falling far short of the minimum standard of expenditures generally considered necessary for health service. Thus, Peoria, which in 1931 spent the ridiculous amount of 28 cents per capita for such work, further reduced its health expenditures in 1933 to 17 cents. Other cities which came within this category were Akron, Ohio, with a reduction from 51 cents to 37 cents; Winston-Salem, N. C., from 70 to 44 cents; Birmingham, Ala., from 37 cents to 22 cents. The cities which had developed good organizations have apparently learnt the value of their investment in health facilities and have made only moderate reductions in budgets.

"Ordinarily, we do not appreciate the benefits that we have enjoyed from the protections set up by the health officer and his associates. We take these for granted. But once the axe begins to work and large sums of money are diverted from health channels, very real services are missed and these may determine in many instances whether people will be sick or well, whether people will live or die. We are not concerned with academic but rather with very real and practical issues. The money spent heretofore for health service has more than paid for itself and in a hundred ways. Communities should beware even under the most trying financial conditions of still further reducing their health budgets. This is the time of all times when the public health must be preserved."—*American Public Health Association News Release.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 19391*

CASE OF RIGHT UPPER QUADRANT PAIN OF SIX MONTHS IN A COLORED WOMAN

SURGICAL DEPARTMENT

PRESENTATION OF CASE

DR. SAMUEL B. KIRKWOOD:** This is the case of a sixty-nine year old colored widow who came into the hospital complaining of malaise and right upper quadrant discomfort of six months' duration.

Six months before entry she had a heavy cold with productive cough. At that time she had generalized aching pain. She had some discomfort with eating but no gaseous eructations. The right upper quadrant pain radiated to the back between her shoulder blades. It was especially bad at night, so much so that it interfered with her sleep. She had an occasional clay colored stool, although her bowels were regular. There was no vomiting. During the past week she thought she had been feverish.

Physical examination showed an obese elderly woman with no jaundice of the sclerae. There was slight peripheral sclerosis. The liver edge was palpable at the level of the umbilicus and was very tender.*** The icteric index was 30, the van den Bergh 9.8. The white cell count was 13,000 and varied up to 15,000. The temperature was variable, 100° with occasional rises to 103° and 104°. The urine showed bile throughout the course, with a slight trace of albumin and some casts. The stools were brown.

She was given daily glucose and in that way prepared for operation, with the final preparation of a transfusion. On the sixth day operation was done. Postoperatively because of a cardiac condition she was given digitalis. The temperature remained picketing. In spite of this she did fairly well for several days, without postoperative distention and without vomiting. Towards the seventh and eighth postoperative days, however, she definitely grew weaker and some nine days after operation she showed a definite change for the worse, with respirations and temperature both mounting. Seventeen days after operation she died.

*This report gives the essentials of two discussions, one in Dr. Cabot's Third Year class, one at a conference of the hospital staff.

**Interne on the West Surgical service.

***This item was not given in the history as discussed by Dr. Fremont-Smith.

CLINICAL DISCUSSION

In Dr. Cabot's Class

DR. MAURICE FREMONT-SMITH: I do not know from this story what to consider. I suppose one should think of cholecystitis with stones, probably a stone in the common duct, certainly infection, probably of the gall bladder. Of course the pain is characteristic in its radiation for that of gall bladder disease. On the other hand it is not characteristic in its duration and its type of onset. Pain here seems to be a small part of the picture; it is malaise and aching pain. She could have, I should think, a subacute endocarditis with fever, a mild stage of the disease. She could have malaria. What else can we consider?

A STUDENT: How about carcinoma of the head of the pancreas?

DR. FREMONT-SMITH: She could have carcinoma of the head of the pancreas. That is probably a very sound suggestion. Of course in carcinoma we usually do not get fever until there is secondary infection. In carcinoma of the lungs we get fever very characteristically because there is secondary infection, and in cancer of the liver we have fever sometimes. The question is whether we do not have secondary infection also. We do not know that she had fever, however. All we know is that she felt feverish.

DR. TRACY B. MALLORY: That statement about the sclerae is of questionable accuracy.

DR. FREMONT-SMITH: It is very hard to tell in colored people. They can normally have dull yellow sclerae.

Both the albumin and the casts are easily explained in the presence of bile. The hemoglobin one could not measure in the presence of bile in the blood. The clay-colored stools on which we have been depending do not exist, if we are to take the interne's observations rather than the patient's. It looks here as if we had better take the patient's rather than the interne's.

I suppose they operated on the hypothesis that it might very well be a cholecystitis with stones, and if it were a carcinoma of the head of the pancreas it might be just as well to know it. I am going to ask Dr. Mallory again,—how often do we get—I suppose it depends entirely upon the position in the pancreas—jaundice from carcinoma of the head of the pancreas before we get real loss of weight and emaciation?

DR. MALLORY: I am sure we may sometimes. Sometimes the carcinoma may actually be in the ampulla, secondarily invading the pancreas. In those cases jaundice may be a very early symptom.

DR. FREMONT-SMITH: It is more characteristic to find the patient emaciated first and jaun-

died later. I do not see how one can tell on this story. I will not make any statement, because I think the thing balances up pretty well. I think she ought to have been operated on.

(OPERATION)

DR. FREMONT-SMITH: She died perhaps of peritonitis, perhaps of sepsis, perhaps of pneumonia.

CLINICAL DISCUSSION

AT STAFF CONFERENCE

DR. KIRKWOOD: Operation was done under spinal anesthesia. On opening the peritoneum the omentum was densely adherent to the anterior abdominal wall. On dissecting away the omentum a gush of a considerable amount of pus appeared in the wound, apparently coming from a mass beneath the dissected omentum. This opening was enlarged and pus evacuated. It apparently came from the gall bladder itself. The gall bladder was partly filled with stones. The walls were very thick; although the liver was in close association with this purulent material it did not in itself seem particularly abnormal. There was considerable exudate in the region of the common duct. Although it was felt that a stone might be present in the common duct, the patient's condition was sufficiently poor to make it inadvisable to do any further exploration. A large rubber tube was sutured into the gall bladder. One cigarette drain was placed in the foramen of Winslow and one in the region of the cystic duct. The wound was closed.

DR. ROBERT L. MASON: The history and findings have been given just as I saw them. I think it is of interest in the postoperative course to note the character of the bile drainage, at first normal in color and amount, but after a few days diminished in amount and definitely lighter in color. About this time the urinary output became diminished and grew progressively so, so that a few days before death she was practically anuric.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Chronic cholecystitis.
Cholelithiasis.
Hepatic insufficiency.
Cholangitis.

DR. MAURICE FREMONT-SMITH'S DIAGNOSIS

Cholecystitis or cancer of the pancreas.

ANATOMIC DIAGNOSES

Adenocarcinoma of the gall bladder with metastases to the regional lymph nodes.
Generalized peritonitis.
Operative wound, cholecystotomy with drainage.
Sepsis of operative wound.
Herniation of operative wound.
Jaundice.
Cardiac hypertrophy, hypertensive type.
Arteriosclerosis, moderate coronary and renal, marked aortic.
Cystitis.
Leukoplakia of the esophagus.
Chronic fibrous pleuritis, right.
Obesity.

PATHOLOGIC DISCUSSION

IN DR. CABOT'S CLASS

DR. MALLORY: I think you were not given a very fair chance in this case, Dr. Fremont-Smith, because many easily ascertainable facts did not appear in the record and some of the supposed facts were wrong. She was very deeply jaundiced, and the liver, which was said not to be enlarged, came down seven centimeters below the costal margin, to the umbilicus. It is possible that some of that enlargement took place postoperatively, but I do not see why it should have, because they drained the gall bladder and the liver should have got smaller rather than bigger. Also the wall of the gall bladder, besides showing a certain amount of thickening, showed at least a dozen small firm papillary projections varying from a half to one and a half centimeters in diameter. There were other similar papillary masses in the mucosa of the cystic duct, the hepatic duct and the common duct; in other words a primary cancer of the gall bladder with secondary involvement of various bile ducts. In the liver, which was greatly enlarged (2700 grams) and deeply bile stained, we found all the ducts filled with green purulent material,—a fresh cholangitis with perhaps a beginning biliary cirrhosis. I think the very extensive and very diffuse acute cholangitis was the most significant single cause of death.

There was a slight terminal peritonitis. There were a few incidentals, sepsis of the operative wound, cardiac hypertrophy, arteriosclerosis; also cystitis emphysematosa,—the mucosa of the urinary bladder filled with air bubbles.

DR. FREMONT-SMITH: Why?

DR. MALLORY: Nobody knows. It is a recognized condition, however.

PATHOLOGIC DISCUSSION

IN STAFF CONFERENCE

DR. MALLORY: The condition of this patient was obviously such that an extensive exploration was impossible and the obvious cholecystitis and pericholecystitis was all that it was possible to deal with at the time of operation.

At autopsy we found that there had been something more. There was a slight diffuse peritonitis which may have been one of the

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At autopsy we found that there had been something more. There was a slight diffuse peritonitis which may have been one of the

precipitating causes of death, but not the only one. The most striking feature was the appearance of the mucosa of the gall bladder, both hepatic ducts, the cystic duct and the common duct, in all of which were numerous raised papillary masses. The ones in the gall bladder were the largest of the group. They were definitely firm and hard, and we felt justified of course in making the diagnosis of carcinoma. I do not think it is possible to say in which of these many areas the tumor was primary. So far as the history goes it may as well have been primary in the common duct as in the gall bladder.

The liver shows extensive degeneration. The portal areas show a very much more marked leukocytic infiltration than was present in the last case, Case 19361.* In many areas small bile radicles can be found whose lumina are completely filled with polymorphonuclears.

A very extensive acute and chronic cholangitis is present throughout the entire liver tissue.

A SURGEON: Did the kidneys show anything?

DR. MALLORY: A slight amount of vascular nephritis going with her hypertension and hypertrophied heart, but nothing else that was significant.

A PHYSICIAN: Was the spleen enlarged?

DR. MALLORY: It was normal in size, 120 grams.

*Published September 7, 1933.

CASE 19392

ACUTE ABDOMINAL PAIN IN A MAN OF SIXTY

SURGICAL DEPARTMENT

A sixty year old laborer of Irish parentage came to the Emergency Ward complaining of a sudden attack of sharp abdominal pain.

Seven years before admission he came to the Consultation Clinic with a history of six months of stomach pain in the afternoon lasting until he ate supper and of vomiting a pint of black clotted blood, with subsequent tarry stools. His past history was negative except for pleurisy with effusion fifteen years previous to the visit, slight winter cough, and alcoholism up to ten years earlier. He was ten or fifteen pounds below his usual weight. On examination at the Clinic he was thin, sallow, rather pale. Otherwise the general examination was essentially negative. The hemoglobin was 60 per cent, the red cell count 2,930,000. A Wassermann was negative. X-ray examination showed a persistent filling defect in the first portion of the duodenum.

In the intervening years he had been under the care of several physicians. Apparently he had had no very severe acute attacks and no bleeding. His diet had varied considerably. For the past week his epigastric pain following meals had been more severe. At four p.m. on the day of admission, seven hours before he came to the hospital, he had sudden onset of severe constant pain beginning in the epigastrium, later generalized throughout the abdomen, then localized in the lower quadrants. He vomited several times; no blood. Since the acute onset he had been prostrated.

Physical examination showed a very sick man lying flat in bed covered with perspiration. His face was drawn. There were dark circles under his eyes. The upper teeth were missing; the lower foul and carious. There was leukoplakia of the upper gums and the buccal mucosa. The heart was enlarged to the left. The rate, rhythm and quality of the heart sounds were normal. A loud systolic murmur was heard all over the precordia. The blood pressure was 200/120. The artery walls were palpable. There was arcus senilis. The lungs showed râles at both bases; no signs of consolidation. The abdomen was board-like and exceedingly tender. There was tympany over the liver. There was the scar of a left herniorrhaphy. The left testicle was atrophied. The extremities, pupils and knee jerks were normal.

The chart before operation is not recorded. The urine showed a slight trace of albumin, a slight trace of sugar and a large trace of acetone. The white blood cell count was 14,000.

Operation was done the night of admission. Two days later the general condition was fair. An occasional tinkle of peristalsis was audible. The patient complained of some abdominal pain. On the fourth day after operation the chart was practically normal and peristalsis was satisfactory. The patient hiccupped occasionally. The following day he was very restless all day and irrational most of the time. The temperature was 102.2°, the pulse 120, the respiration 40. That night he suddenly vomited ten or twelve ounces of dark bloody material and died.

CLINICAL DISCUSSION

DR. MAURICE FREMONT-SMITH: The history would be consistent with the x-ray findings in the Consultation Clinic. He might have had cirrhosis as the result of alcoholism, and the blood from esophageal varices. On the other hand that would not give him pain coming on in the afternoon and relieved by supper. He was fifty-three years old when he began to have gastric symptoms, and that is old for the beginning of duodenal ulcer. I should judge that the history is not very reliable.

He evidently had had a rather severe hemorrhage less than a month before he came in to the Consultation Clinic. If it were a good sized hemorrhage it might account for this grade of anemia even a month later.

The history of the intervening years is the

history of a penetrating ulcer, probably on the posterior wall of the duodenum, the type that works its way into the pancreaticoduodenal artery and causes large hemorrhages. We do not often get these very large hemorrhages from ulcers elsewhere than on the posterior duodenal wall.

A penetrating ulcer, perhaps beginning to perforate during the week before he came in, with increasing pain, less food relief, and finally a perforation with peritonitis,—that, I think, would be the best explanation for this story. If he had that he would show very definite abnormalities on laboratory examination; we shall see if this proves to be so.

Tympany over the liver is a sign of free air or gas in the peritoneal cavity, which means perforation of a hollow viscus. I do not know that it ever means anything else, unless an infection with the gas bacillus. Of course there are times when we get a colon so full of gas that the hepatic flexure causes resonance over the region of the liver. A flat x-ray plate of the abdomen showing gas beneath the diaphragm would clinch the diagnosis. Am I right in saying that gas when it is present is always under the right diaphragm?

Dr. Aubrey O. Hampton: It is under both diaphragms, but it is more important when it is under the right because there is no chance of confusing it with gas in the bowel or stomach.

Dr. Fremont-Smith: Anyway we know he had perforation, and of course we have the other incidental findings of hypertension, hypertensive heart disease and arteriosclerosis, arteriosclerotic kidneys.

"The left testicle was atrophied," from mumps perhaps, or a blow,—we do not know.

The urinary findings are all consistent with starvation and marked infection.

The white blood cell count was 14,000 only.

I wonder how long ago he had perforated, because on that alone probably depends whether he is going to get well or not, and every hour after perforation adds a tremendous numerical percentage of fatality. If we can operate on a duodenal ulcer within three or four hours the chances of recovery are extremely good. Of course that is not true of perforation low in the intestine, as in a diverticulitis. How long had he been complaining of this very acute pain? We do not know. Maybe he did not know.

A Student: The record states, "Seven hours before he came to the hospital he had sudden onset of severe constant pain."

Dr. Fremont-Smith: Seven hours is a long time after perforation.

Dr. Richard C. Cabot: Have we any films in this case?

Dr. Hampton: The films were taken in 1926, and we destroy them when they are five years old.

PREOPERATIVE DIAGNOSIS

Perforated duodenal ulcer.

OPERATION

Upper right paramedian incision. There was a gush of cloudy viscid fluid containing coagulated milk from the incision on its opening, as well as a puff of gas. The whole of the upper abdomen showed evidence of an early fibrinous exudate. A large amount of cloudy fluid however was found over both domes of the liver. There was an acute perforation of the duodenum just distal to the pylorus already partly adherent to the under surface of the liver with fibrin. The duodenum at this point was considerably thickened. An ulcerative process plainly extended beyond the diameter of the perforation. The perforation was sutured by turning in the duodenum at this point in a transverse direction by a double row of running sutures. . . . Great care was taken to remove all fluid from the upper abdomen. A cigarette wick was left in the suprarenal fossa on the right, coming out through a stab wound below the costal margin. Another cigarette wick was placed into the pouch of Douglas and brought out through a groin stab wound. The main incision was closed in three layers, leaving a small piece of rubber dam for drainage.

FURTHER DISCUSSION

Dr. Fremont-Smith: They do not state there what portion of the duodenum was actually involved by the ulcer, in other words whether it was a posterior ulcer. I think Dr. Mallory probably will be able to tell us that later. The perforation, of course, must be on some other portion than the posterior wall, otherwise it would not perforate. Adhesions would stop perforation, I assume. Dr. Mallory will later correct me.

They were looking for every sign of a return of peristalsis as an indication that the peritonitis was not an overwhelming one.

He died of peritonitis. He must have had some more hemorrhage, although he may have had hemorrhage from normal gastric mucosa under those conditions. The peritonitis he had was sufficient to cause death without assuming any further leak from the ulcer.

I think I have covered a little earlier all the points that I should expect to find at the autopsy. Of course this is the type of case that if he had gone on to recovery might very well have developed a subdiaphragmatic abscess. He may have something of that sort now. There is a little question as to why he died so suddenly. I should have expected him with peritonitis to get sicker gradually and die, not so quickly as this. I wonder whether he had another hemorrhage.

A STUDENT: Could he have had another perforation?

DR. FREMONT-SMITH: He could have had. I do not know whether a man with a blood pressure of 200/120, assuming that he had hemorrhage, would be any more likely to have hemorrhage than a man with a lower blood pressure, —do you, Dr. Cabot?

DR. CABOT: I do not know.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Perforated duodenal ulcer.

DR. MAURICE FREMONT-SMITH'S DIAGNOSES

Perforated duodenal ulcer.
Peritonitis.
Arteriosclerosis.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Duodenal ulcers with perforation of one of them.

2. *Secondary or terminal lesions.*

General peritonitis.
Paralytic ileus.
Pulmonary edema and congestion.

3. *Historic landmarks.*

Diverticula of the sigmoid.
Diverticulum of the duodenum.
Arteriosclerosis, aortic and coronary, slight.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: We found two ulcers in this man, both in the duodenum, a quite large one three and a half centimeters in diameter on the anterior wall and a smaller one two centimeters in diameter around towards the posterior wall but not quite on it, and in the base of that one we found a small hole, two millimeters in diameter. I think that was the point of the original perforation, and it had perforated once again, probably in the same place where it had been sewed, since we could not find any evidence of the sewed area. All the peritoneal surface was very much injected. There was very little fluid but a trace of fibrin here and there, particularly over the dome of the liver, and I think there is no question that he had a generalized peritonitis.

We found nothing else that seemed to be an adequate cause for death. There was acute pulmonary congestion and edema but very little gross evidence of pneumonia. The heart was hypertrophied, as we might expect with this hypertension, weighing 480 grams. He had a diverticulum of the duodenum as well as ulcers, and numerous diverticula of the sigmoid.

DR. FREMONT-SMITH: It is entirely hazardous to guess as to whether he might have got well if he had not perforated again, is it not?

DR. MALLORY: Yes; I do not believe there is any way to tell.

DR. FREMONT-SMITH: Was any big artery involved in either of those ulcers? Was there any explanation for the blood vomited at the very end?

DR. MALLORY: No.

DR. CABOT: It is interesting here to have proof of a man whose first symptoms from what has been shown to be duodenal ulcer came at fifty-three, at a time when we are thinking of cancer instead of ulcer. I think within a few weeks we had another case where I went wrong because of the age and said cancer when it really was ulcer.

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FOOD AND DRUG LAWS

IN order to protect the health of the people and prevent fraud, the Federal Government and the several states have laws designed to control the improper distribution of drugs, chemicals and unsound or adulterated foods. While it is true that decomposed crabmeat or wormy figs are just as objectionable to the people of Texas as to those of Maine, and that falsely and fraudulently labeled remedies constitute a menace to health in all sections, it is equally true that state administrations vary so widely in dealing effectively with such matters that it seems reasonable to have the Federal laws so comprehensive that adequate protection will be provided for the entire country.

Probably few people other than health authorities know of the many loopholes in existing laws relating to foods and poisons, so that a study of the monthly reports of the Department of Agriculture covering seizures of goods and prosecutions of vendors might be informative.

During August the Administration caused the seizure of one hundred and sixty-eight consignments of foods and drugs found to violate the law, and in that month eight criminal prosecutions were terminated resulting in fines ranging from $40 to $4200.

Federal seizures during August included a large number of falsely labeled patent medicines, some of which were recommended for treating appendicitis, Bright's disease, cancer, gallstones, arthritis, "female troubles", and other illnesses. The blatant and fraudulent claims disseminated by the proprietary medicine fraternity have always been an offense to the medical profession, and the publications selling space for them are equally condemned by right-minded physicians.

Even though there is an awakened conscience among the publishers of some papers, this evil persists to an unwarranted degree and should be suppressed. For their protection, some of these manufacturers have changed the wording of their claims so that there is immunity under present laws.

Unfortunately it is almost impossible to have the states unite in an agreement on a model law. An examination of the volumes of Dunn's Food and Drug Laws which set forth the regulations of the several states respecting this subject cover 3306 pages. The Food and Drug Laws of Massachusetts alone, cover 84 pages with about six pages of citations. The drafting of a uniform law for all states would be a Herculean task because of their differing provisions and the multitude of court decisions.

Fortunately, enough interest in this subject has been aroused to inspire the Federal Government to undertake a revision of its food and drug laws and a preliminary draft has been prepared and is now pending in Congress as appears in Senate 1944 introduced by Senator Copeland. The title of this bill reads: A Bill to prevent the manufacture, shipment, and sale of adulterated or misbranded food, drugs, and cosmetics, and to regulate traffic therein; to prevent the false advertisement of food, drugs, and cosmetics, and for other purposes.

This bill should be carefully scrutinized by the medical profession and such advice tendered to Congress as may be applicable to strengthening those of its features upon which physicians are competent to express opinions.

Even the enactment of this bill will not immediately make clear the power of the Government to correct all existing abuses, because like all such laws the validity thereof will be subject to court interpretations and decisions which are necessary in the process of building stable laws. Certain interests will, as heretofore, strive to find loopholes for evasion of legal requirements.

The medical profession may, however, take heart in the prospect of progress for, if the Government sets its intelligence at work on a great problem, it may be expected with reason that it will accomplish its purpose in the end.

SOME OF THE PROBLEMS OF ARTHRITIS

It is of interest to note the increasing concentration of study on arthritis throughout the world as shown by the large number of articles on the subject by well-qualified practitioners and investigators. Until comparatively recent years few physicians exhibited much interest in treating this disabling disease in its chronic form, so that these sufferers were too often allowed to drift through their periods of hope and depression with such empirical dosings as more or less indifferent doctors could find time, taken from more interesting cases, to prescribe. With an awakened appreciation of the magnitude of the problem following the publication of statistical and pathological data supplemented by studies on metabolism and infections in relation to the joint conditions, a growing interest in the medical profession respecting arthritis is apparent.

The question as to how public health should enter into the picture is agitating some minds with diverse reactions for, although the health boards seem to be desirous of coöperation with practitioners in providing adequate care, some doctors have expressed doubt about the justice of having state medicine invade this field except among the indigent.

This *Journal* has been favored by a number of articles on arthritis and is concluding that by Matz in this issue in which studies of the disease in military service are reported.

It is especially desirable that general interest in this subject should permeate the medical profession for although the mortality rate is low, less than four per 100,000, in the United States the incidental suffering and the economic loss constitute a problem of great magnitude as shown in facts presented by Matz. He reports that arthritis in Berlin causes three or four times the disability of tuberculosis and in Massachusetts there are 140,000 arthritics as compared with 25,000 cases of tuberculosis at the present time. Figures from Sweden, England, and New York show equal or greater economic burdens because of this disease.

Reference to the 34,369 ex-service men with the cost of "emoluments for arthritis" of more than ten million dollars in 1931 is impressive enough to stimulate the average citizen to try to evaluate the great burden which arthritis is imposing on this country.

Other articles are in preparation on arthritis which will appear later in this *Journal*. These, together with those which have been published, present a fairly good résumé of the problems which medicine and the government are trying to solve.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

BOCK, A. V. A.B., Ph.D., M.D. Harvard University Medical School 1915. Physician, Massachusetts General Hospital. Associate Professor of Medicine, Harvard Medical School. Address: Massachusetts General Hospital, Boston, Mass. Associated with him are

DULIN, J. W. B.S., M.D. State University of Iowa College of Medicine 1929. House Officer in Pathology, Massachusetts General Hospital. Address: Massachusetts General Hospital, Boston, Mass. And

BROOKE, P. A. M.D. Harvard University Medical School 1926. Proctologist, City Hospital, Worcester, Mass. Gastro-Enterologist, Fairlawn Hospital, Worcester, Mass. Address: 477 Cambridge Street, Worcester, Mass. They write on "Diaphragmatic Hernia and Secondary Anemia: Ten Cases." Page 615.

ROBEY, WILLIAM H. M.D. Harvard University Medical School 1895. Clinical Professor of Medicine, Emeritus, Harvard Medical School. Consulting Physician, Boston City Hospital, Milton Hospital, and Norwood Hospital. His subject is "Extension of Preventive Measures in Adult Life." Page 625. Address: 202 Commonwealth Avenue, Boston.

BROWN, ROBERT L. M.D. Harvard University Medical School 1933. Intern, Strong Memorial Hospital, Rochester, New York. Address: Strong Memorial Hospital, Rochester, New York. Associated with him is

ALBRIGHT, FULLER. A.B., M.D. Harvard University Medical School 1924. Instructor in Medicine, Harvard Medical School. Visiting Physician, Massachusetts General Hospital. Address: Massachusetts General Hospital, Boston. They write on "Estrin Therapy in a Case of Hemophilia." Page 630.

PHILPOTT, N. W. M.C.O.G., C.M., M.D. McGill University Faculty of Medicine 1926. Assistant Demonstrator in Obstetrics and Gynecology and Assistant Demonstrator in Embryology, McGill University, Montreal. His subject is "Normal Labor." Page 633. Address: 1610 Sherbrooke Street, West, Montreal, Canada.

MELHADO, GERALD C. M.C.O.G., C.M., M.D. McGill University Faculty of Medicine 1914. F.A.C.S. Associate in Obstetrics and Gynaecology, Royal Victoria Hospital, Montreal. Demonstrator, Obstetrics and Gynaecology, McGill University. His subject is "Surgical Delivery Per Vagina at Term. The Posterior Occiput." Page 635. Address: Medical Arts Building, Sherbrooke and Guy Streets, Montreal, Canada.

MATZ, PHILIP B. M.D. For further information see This Week's Issue, page 560, issue of September 14, 1933.

The Massachusetts Medical Society

STATED MEETING OF THE COUNCIL

A STATED meeting of the Council will be held in John Ware Hall, Boston Medical Library, 8 The Fenway, Boston, on Wednesday, October 4, 1933, at 12 o'clock, noon.

Business:

1. Reading record of last meeting in abstract, to put Councilors into touch with the business of the present meeting.
2. The Chair reads obituaries of Councilors who have died since the last meeting.
3. Report of the Standing Committee of Arrangements as to the 1934 Annual Meeting in Worcester. Vote the dates of that meeting.
4. Reports of the Standing Committee on Membership and Finance.
5. Reports of committees appointed to consider petitions for restoration to the privileges of fellowship. New petitions.
6. Appointment of an Auditing Committee to audit the Treasurer's accounts as of December 31, 1933.
7. Reports of any other committees or delegates.
8. *Incidental Business:*
   (a) Motion by W. A. Lane as to employing a paid legislative agent to assist the Committee on State and National Legislation.
   (b) Suggestion of F. J. Cotton (*New England Journal of Medicine*, July 27, 1933, page 216) concerning a State Board to pass judgment on all suits for alleged malpractice.
   (c) Suggestion that all standing and special committees read only abstracts of their reports at the Annual Meeting of the Council, in order to save time.
   (d) Any other incidental business.

WALTER L. BURRAGE, M.D., *Secretary.*
Brookline, September 27, 1933.

Councilors are reminded to sign one of the attendance books before the meeting.

NOTICE TO FELLOWS

THE Treasurer of the Society wishes to call the attention of all Fellows to the present opportunity to obtain copies of Dr. Viets' "Brief History of Medicine in Massachusetts." The Society has copies available for sale. The volumes printed by the Riverside Press, published by Houghton Mifflin Co., in beautiful crimson cloth binding, are offered by the Treasurer, now, at the reduced price of one dollar each copy. The volume has 194 pages, has also a number of full page illustrations, is printed on fine paper, and is indexed.

The volume covers the developments in medicine and surgery in Massachusetts from the earliest period of 1620-1700, describes the medical history of the Revolution in Massachusetts, the founding of our Society, and the discovery of ether anesthesia.

The present low price, one dollar a copy, is attractive, and the Treasurer hopes that many more Fellows will take this opportunity to buy their copies.

Orders should be sent to the Treasurer, 8 The Fenway, Boston, enclosing check, for as many copies as are desired, at one dollar each, postpaid.

CHARLES S. BUTLER, M.D., *Treasurer.*

MISCELLANY

THE ONE HUNDRED AND FIFTIETH ANNIVERSARY OF THE HARVARD MEDICAL SCHOOL

A program to celebrate the one hundred and fiftieth anniversary of the Harvard Medical School, the oldest of Harvard's professional schools, was announced September 18 by Dean David L. Edsall of the Harvard Medical School. The ceremonies will be held on October 6 and 7, and both President James Bryant Conant and his predecessor in office, A. Lawrence Lowell, will assist. Invitations to the proceedings have been mailed to the 4,000 alumni of the Harvard Medical School.

According to the records of the Harvard Corporation, the opening of the Medical School dates from October 7, 1783, with the induction into office of John Warren as Professor of Anatomy and Surgery, and Benjamin Waterhouse as Professor of the Theory and Practice of Physic. Exercises have been arranged to celebrate the one hundred and fiftieth anniversary of that event.

The anniversary ceremony will begin on October 6, with a program at the present buildings of the Harvard Medical School on Longwood Avenue, and at three of its affiliated hospitals in Boston, the Massachusetts General Hospital, the Boston City Hospital, and the Peter Bent Brigham Hospital. Following morning inspection of these hospitals, an afternoon program has been arranged for the alumni at the Medical School, including a series of lectures by members of the Faculty on work now being done at the school. In the evening, the one hundred and fiftieth anniversary dinner will be held at Vanderbilt Hall, the Medical School dormitory.

On October 7, formal ceremonies will be held in Cambridge, to celebrate the anniversary. The Corporation records contain a long-hand account of the original exercises in 1783, and the program for October 7 has been designed to repeat in part the original exercises.

At 10:30, a procession of University officers, and faculty and alumni of the Medical School will form at University Hall in the College Yard, and proceed to Sanders Theatre. Here the program will include a brief speech by President Conant, and an address by former President Lowell, the original inaugural orations of Professors Warren and Waterhouse, and the psalms which were sung at the occasion one hundred and fifty years ago.

Dr. Warren's oration will be read by Dr. J. Lewis Bremer, Hersey Professor of Anatomy, and Dr. Waterhouse's oration will be read by Dr. Henry A. Christian, present holder of the Hersey Professorship of the Theory and Practice of Physic. These chairs are the two oldest endowed Professorships in the Medical School.

Following establishment of the first professorships in medicine at Harvard in 1783, instruction was given in Holden Chapel until 1810, when classes were transferred to Boston. In 1816 the first Medical School building was erected. From 1882 to 1906 the School occupied the building at the corner of Boylston and Exeter Streets, now used by Boston University. In 1906 the University completed the group of white marble buildings on Longwood Avenue now occupied by the Medical School. Vanderbilt Hall, the dormitory for Medical School students, was completed in 1927.

In 1788, the University conferred its first medical degree on two students. Since then the school has grown steadily, and at Commencement last June granted 131 degrees. The Faculty of the School has grown from the original three professors to a present teaching staff of over 130.

THE INTERNATIONAL ASSEMBLY OF THE INTER-STATE POSTGRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The International Assembly of the Inter-State Postgraduate Medical Association of North America will be held in the Public Auditorium, Cleveland, Ohio, October 16-20, 1933. Many distinguished teachers and clinicians will appear on the program. A major list of the names of the contributors to the program with other information appears on page iv of the advertising section of this Journal. All members of the Massachusetts Medical Society are cordially invited to attend. Registration fee of $5.00 admits all members in good standing.

A SENSATIONAL REPORT

Newspapers have reported that an Indian girl under seven years of age recently gave birth to an infant weighing four pounds and three ounces. The mother made a good recovery and was able to provide breast feeding for nine months.

The report alleges that this record is vouched for by Dr. Hilda Keane of the Victoria Zenana Hospital at Delhi.

RESEARCH ON THE GONOCOCCUS

A Committee for Survey of Research on the Gonococcus and Gonococcal Infections has been formed by the Division of Medical Sciences of the National Research Council, in coöperation with the American Social Hygiene Association. Its purpose is to collect, analyze, and collate the facts already established and the efforts now in progress to add to knowledge of the gonococcus and gonococcal infections, especially as regards bacteriology, pathology, immunity, mechanism of infection, and some of the forms of therapy. Attention will be concentrated chiefly on work done in the United States. At the close of the preliminary survey the Committee, with the assistance of a conference of experts, will compile a report with the object of stimulating interest in the study of the gonococcus, of providing a point of departure and of suggesting promising leads for further investigation. The survey will cover the literature, but it is hoped that unpublished work, and studies which were incomplete or whose results were inconclusive, may also be included.

Dr. Stanhope Bayne-Jones, Chairman, earnestly invites the coöperation of workers interested in this field. Other members of the Committee are Dr. Edward L. Keyes, Dr. Walter Clarke, Secretary, and Dr. Francis Blake, Chairman of the Division, ex-officio. Headquarters have been established at Room 1101, 450 Seventh Avenue, New York, where communications and reprints will be welcomed. — *Bulletin of the National Research Council.*

A GIFT TO PROMOTE CANCER RESEARCH

Mr. Paul McIntyre recently gave $100,000 to the University of Virginia for work on cancer.

Dr. J. Shelton Horsley is reported to have stated that this fund will probably be devoted chiefly to clinical research and clinical treatment.

A NEW MEDICAL CENTRE IN FLORIDA

Dr. Fred H. Albee, Professor of Orthopedic Surgery, Columbia University, has organized The Florida Medical Centre at Venice, Florida. The announcement sets forth that special attention will be given to heliotherapy and that recreation will be combined with medical treatment.

EUGENICAL STERILIZATION TO DATE

The bulletin of the Human Betterment Foundation brings down to January 1, 1933, the first-hand census of eugenical sterilization reported by Harry H. Laughlin in the September-October, 1932, number of *Eugenical News.*

The 1933 total is 16,066, as compared with 10,877 up to January 1, 1930. The increase of nearly 50

per cent in three years over the total of the preceding quarter of a century seems to indicate a better education on the part of the public of the problem of the importance of sterilization for eugenical advance.

The following states have operated in more than a total of 100 cases:

California, 8,504; Virginia, 1,333; Michigan, 1,083; Kansas, 976; Oregon, 882; Minnesota, 693; Wisconsin, 492; Connecticut, 338; Delaware, 296; Nebraska, 229; Indiana, 217; New Hampshire, 165; South Dakota, 139; Alabama, 131. — *Eugenical News*, July-August, 1933.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1932 AND SEVEN YEAR AVERAGE

MONTH ENDING SEPTEMBER 16, 1933

	1933					1932			
Diseases	Week ending Aug. 26	Week ending Sept. 2	Week ending Sept. 9	Week ending Sept. 16	Average cases reported for week corresponding to Sept. 16 for past seven years	Week ending Aug. 27	Week ending Sept. 3	Week ending Sept. 10	Week ending Sept. 17
Anthrax	—	—	—	—	—	—	—	—	1
Cerebrospinal Men.	—	—	1	—	—	—	—	1	—
Chicken Pox	5	3	10	2	5	2	4	4	—
Conjunctivitis Inf.	—	—	—	1	—	—	—	1	—
Diphtheria	4	1	3	3	9	5	11	1	6
Dysentery Bacillary	—	1	—	4	—	—	—	—	—
Encephalitis Epid.	1	3	3	—	—	—	—	—	—
German Measles	—	—	1	—	2	1	—	2	2
Influenza	1	2	1	1	2	1	—	—	3
Measles	1	7	6	4	6	14	7	3	11
Mumps	1	13	11	13	8	8	3	10	17
Paratyphoid Fever	—	—	—	—	—	1	2	—	—
Pneumonia (Broncho)	12	6	9	10	10	8	7	4	7
Pneumonia (Lobar)	7	6	8	3	12	4	5	6	8
Poliomyelitis	4	11	6	9	19	1	3	2	—
Scarlet Fever	14	9	10	13	12	7	9	11	22
Septic Sore Throat	—	—	1	5	1	1	—	—	—
Tetanus	—	—	1	2	—	2	1	—	—
Trichinosis	—	—	—	1	—	—	—	—	—
Tuberculosis (Pul.)	20	18	24	33	29	24	20	12	19
Tuberculosis (O. F.)	2	2	1	2	3	3	3	2	4
Typhoid Fever	3	5	3	2	6	—	2	2	2
Undulant Fever	1	—	1	3	—	1	—	—	—
Whooping Cough	37	14	29	41	40	44	37	45	46
Gonorrhea	28	52	38	36	34	26	22	38	31
Syphilis	21	29	22	34	26	25	23	32	35

Remarks: No cases of Asiatic cholera, glanders, plague, or yellow fever during the past seven years.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR AUGUST, 1933

Anterior poliomyelitis remains considerably above normal with an increase over July. Present indications are that it will be the peak month of the year.

Scarlet fever continues its 1933 low rate after a high 1932 level.

Tuberculosis, pulmonary and other forms, shows slight increase over the preceding August.

Diphtheria is again lower than the corresponding month of last year.

Typhoid fever shows a constant low prevalence.

Whooping cough is running slightly above normal.

Encephalitis, epidemic cerebrospinal meningitis, lobar pneumonia, measles, German measles and chicken pox show nothing remarkable.

Mumps continues lower than in 1932, a year of somewhat increased incidence.

RARE DISEASES

Anterior poliomyelitis was reported from Agawam, 1; Amherst, 1; Arlington, 1; Belmont, 1; Beverly, 6; Boston, 37; Braintree, 2; Brockton, 1; Brookline, 1; Cambridge, 5; Clinton, 1; Dedham, 1; Everett, 3; Fall River, 1; Falmouth, 3; Fitchburg, 1; Framingham, 3; Gardner, 1; Gloucester, 2; Haverhill, 1; Hudson, 1; Hull, 3; Leominster, 5; Lexington, 3; Leyden, 1; Lynn, 3; Malden, 5; Mashpee, 1; Medford, 3; Nantucket, 1; Natick, 1; Needham, 1; New Bedford, 2; Newton, 1; North Attleboro, 1; Northbridge, 2; Norwood, 1; Peabody, 1; Pittsfield, 1; Quincy, 5; Revere, 2; Rockland, 1; Salem, 1; Saugus, 1; Somerville, 8; Stoneham, 2; Wakefield, 2; Watertown, 2; Wellesley, 2; Wilmington, 1; Winchester, 1; Worcester, 10; Total, 148.

Dysentery was reported from Danvers, 2; Stoughton, 1; Total, 3.

Encephalitis lethargica was reported from Agawam, 1; Andover, 1; Lynn, 1; Total, 3.

Epidemic cerebrospinal meningitis was reported from Boston, 1; Cambridge, 1; Holyoke, 1; New Bedford, 1; Taunton, 1; Wilmington, 1; Winthrop, 1; Total, 7.

Malaria was reported from Acton, 1; Chelsea, 1; Lakeville, 1; Taunton, 1; Total, 4.

Pellagra was reported from Cambridge, 1.

Septic sore throat was reported from Barre, 3; Boston, 2; Haverhill, 1; Lowell, 7; Melrose, 1; Pittsfield, 2; Taunton, 1; Wellesley, 1; Total, 18.

Tetanus was reported from Boston, 2; Newton, 1; Total, 3.

Trachoma was reported from Watertown, 1; Boston, 1; Total, 2.

Trichinosis was reported from Boston, 2.

Undulant fever was reported from Braintree, 1; Brockton, 1; Total, 2.

MONTHLY REPORT FOR AUGUST, 1933

Disease	Aug., 1933	Aug., 1932	Average*
Anterior Poliomyelitis	148	10	144
Chicken Pox	125	123	104
Diphtheria	64	120	157
Dog Bite	624	592	623
Epidemic Cerebrospinal Meningitis	7	2	8
German Measles	25	26	22
Gonorrhea	664	653	570
Lobar Pneumonia	98	75	76
Measles	240	253	225
Mumps	103	176	133
Scarlet Fever	272	315	244
Syphilis	336	333	261
Tuberculosis, Pulmonary	369	283	340
Tuberculosis, Other Forms	42	31	46
Typhoid Fever	25	28	42
Whooping Cough	686	452	495

*Average number of cases for August during the preceding five years.

IMMUNIZING THE MILLIONTH CHILD AGAINST DIPHTHERIA

On Monday, May 15, the millionth child in New York City was immunized against diphtheria. The occasion was marked by the attendance of a number of distinguished guests, including Mayor John P. O'Brien, and the immunization was performed by Dr. William H. Park, pioneer in this method of eradicating diphtheria. Immediately afterward Dr. Béla Schick immunized the first child of the second million.

When the Greater City of New York was formed in 1898 diphtheria caused 2277 deaths. Last year, in a population just double that in 1898, there were only 212 deaths from this disease. The last four years have witnessed the greatest rate of decline in diphtheria mortality and this has been due entirely to the intensive educational campaign to popularize the active immunization of young children according to the method perfected by Park.

There are, to be sure, still a large number of young children who have not yet been immunized, and diphtheria will not be completely eradicated until all parents see to it that their children are immunized before their first birthday anniversary. The gratifying result following the first million immunizations demonstrates not only that the method is highly effective in preventing diphtheria, but that it is absolutely safe. Not a single serious after-effect has attended the million immunizations performed in this city.—*Quarterly Bulletin, City of New York, Department of Health.*

CORRESPONDENCE

AN EXPLANATION OF CHLORINE IN BOSTON'S WATER SUPPLY

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

September 22, 1933.

Editor, *New England Journal of Medicine,*

Naturally the State Department of Public Health was much interested in your recent editorial, "Boston's Lead Poison Problem." It would seem to us unfortunate if, from your editorial inference, the conclusion is drawn that because the Boston water is chlorinated the lead hazard from the water is increased. Repeated examinations have failed to reveal free chlorine in the water when it reaches the consumer. On the other hand, it is our understanding that in order to have any influence on the lead content of the water a fairly high concentration of free chlorine must be present. We are continuing studies of this matter.

In this connection I would call your attention to the fact that the Metropolitan water supply is chlorinated at the head of the Sudbury Aqueduct in Framingham before passing into the Chestnut Hill Reservoir. In the case of the Weston Aque-

duct the water is chlorinated at the gatehouse in Weston prior to storage in Chestnut Hill Reservoir and Spot Pond Reservoir. In the case of the Cochituate Aqueduct, chlorine is applied prior to the storage of the water in Chestnut Hill Reservoir. The amount of chlorine so applied is in no case greater than 0.35 of a part per million. Since the lead pipe in all instances is at the consumer end of the system you can readily see that there would be no free chlorine in the water by the time it reaches the consumer as our tests show.

While the Department has consistently encouraged the replacement of lead pipe where renewal of service pipe is necessary, there is considerable difference of opinion as to what is the ideal pipe to use for replacement. Cement-lined pipe is generally recommended but it is wholly impracticable for use with hot water and does increase the hardness of the water. With the reduction in the cost of copper, this metal is being more generally used for such pipe but there is no complete agreement as to the tolerance of the body for copper or many of the other heavy metals.

In most samples of Boston water analyzed by this Department over a number of years the lead content has been found to be much less than the amounts reported in your editorial, particularly in the case of the running samples. Occasionally a sample which has stood in the pipe overnight shows an undesirable amount of lead. Fortunately it is common practice before taking water for drinking to allow it to run for some time in order to lower the temperature. This practice is to the interest of the public health.

In view of the above we repeat that it would seem unwarranted to introduce the very large expense necessary to replace all the lead connections in the homes in Boston for the reasons stated in your editorial, although with the increasing exposure of our people to lead poisoning from other sources, as you so aptly point out, the last word in the question of lead poisoning has of course not been said.

Very truly yours,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

A CRITICISM OF TECHNICIANS' WAGES

217 Warren Street,
Allston, Massachusetts,
September 21, 1933.

Editor, *New England Journal of Medicine*,

Regarding the advertisement appearing in the *New England Journal of Medicine* of September 7, for a doctor's assistant and technician, it may be of interest to you to know how trained members in this field are being imposed upon by the medical profession.

In this particular case the duties required were to make all routine laboratory tests, including basal metabolism and the administering of the various vaccines, also all stenographic work. This man has a communicating office with another physician and the girl who accepted this position was expected to answer his telephone as well as keep his office in order. The remuneration for these services was to be ten dollars per week.

I have always been under the impression that any position offered through the *New England Journal of Medicine* had a great deal of merit and feel that the members of the Massachusetts Medical Society are under the same impression and not aware of the disgraceful wages offered by members of their profession.

If the standards of the medical profession are to be maintained, it would seem mandatory that the profession should establish a minimum salary above that of an unskilled factory worker.

Yours respectfully,

J. A. GADD.

RECENT DEATHS

ATKINSON—LIZZIE DANIEL ROSE ATKINSON, M.D., formerly of Stoughton, later living at 1753 Massachusetts Avenue, Cambridge, died in that city September 20, 1933. She was born in Calcutta, India, eighty years ago, the daughter of a Newburyport merchant and came to America at the age of three. She graduated in medicine from the University of Michigan Medical School in 1891 and joined the Massachusetts Medical Society in 1894. She had been active in church affairs in Auburndale and had been President of the Girls' Friendly Society.

KNIGHT — CHARLES SUMNER KNIGHT, M.D., of Falmouth, Massachusetts, died in Westboro, Massachusetts, September 21, 1933, while on a visit to that town, where he formerly practiced. He was born in Marlboro, Massachusetts, in 1856, and graduated from the University of Michigan Medical School in 1878. He formerly practiced in Westboro and was for a time a State Medical Examiner in Worcester County. After moving to Falmouth he was an Associate Medical Examiner for Barnstable County. He joined the Massachusetts Medical Society in 1902. He is survived by his widow Mrs. Lanina E. (Briggs) Knight who is a direct descendant of Abigail Adams, wife of President John Adams; a daughter, Mrs. Henry W. L. Fox; and a son, William C. Knight, of Michigan.

NOTICE

REMOVAL

PHILIP E. A. SHERIDAN, M.D., announces the removal of his office to 96 Bay State Road, Boston, on or before October 1, 1933. Telephone: Kenmore 3588.

REPORTS AND NOTICES OF MEETINGS

THE ACADEMY OF PHYSICAL MEDICINE

Annual Meeting

The Annual Meeting of the Academy of Physical Medicine was held at the Palmer House, Chicago, on September 13 and 14.

The dinner held in conjunction with the American Congress of Physical Therapy on September 13 was presided over by Dr. William L. Clark of Philadelphia, President of the Academy of Physical Medicine, over two hundred being present.

Dr. William D. McFee of Boston represented the Academy in an address setting forth its ideals in a tribute to the late Dr. Frank Butler Granger of Boston, who, upon the completion of his work on the staff of the Surgeon General during the World War as Director of the Department of Physical Therapy, with his Army colleagues organized the Academy for the furtherance of the scientific study and application of physical means in medical procedure which had proved so invaluable during and after the World War.

The speakers included the following:

Dr. Walter L. Bierring, Des Moines, President-Elect of the American Medical Association.

Dr. Morris Fishbein, Chicago, Editor of the Journal of the American Medical Association.

Dr. Austin A. Hayden, Chicago, President of the Chicago Medical Society.

Dr. John Stanley Coulter, Chicago, Council of Physical Therapy, American Medical Association.

Dr. William D. McFee, Boston, Board of Directors, Academy of Physical Medicine and Vice-President of the International Congress of Physical Therapy.

Dr. Albert F. Tyler, Omaha, President-Elect of the American Congress of Physical Therapy.

Dr. Roy D. Fouts, Chicago, Board of Governors, Congress of Physical Therapy.

Dr. Philip Kreuscher, Chicago, President of the Illinois State Medical Society.

Dr. William H. Schmidt, Philadelphia, Director of the Curtis Clinic, Jefferson College Hospital.

Dr. Heinrich Wolf, New York City, President of the New York Physical Therapy Society.

Dr. William W. Worster, San Gabriel, California, College of Medical Evangelists.

Dr. Bierring spoke briefly on the progress and present status of physical medicine.

Dr. Fishbein referred to the advances made in this specialty through its coöperation with surgery, pathology, physiology and physics and its outlook for future development through educational channels.

Dr. Coulter outlined the functions of the Council on Physical Therapy.

Dr. Kreuscher spoke of the interdependence of physical therapy and orthopedics.

On this occasion the degree of F.A.P.M., the signal honor of the Academy of Physical Medicine, was conferred upon Dr. William L. Clark of Philadelphia in recognition of his distinguished achievements in the treatment of cancer and of his pioneer work in the field of electrosurgery. The presentation was made by Dr. Arthur H. Ring of Arlington, Secretary-Treasurer of the Academy.

The golden key, emblematic of the highest esteem of the Congress, was awarded to Dr. Harvey Cushing (in absentia), as the dean of brain surgery, and as a pioneer in the use of electrosurgery. Dr. Gustavus M. Blech of Chicago, Dr. Regaud of Paris, Dr. Gustav Bucky of New York, and Dr. Walter J. Turrell of Oxford, England, were also recipients of similar awards.

During the dinner a message of greeting was received from Franklin D. Roosevelt, President of the United States.

On Thursday morning, September 14, the annual business meeting of the Academy was held. The following officers were elected for the ensuing year (1933-1934):

President, William L. Clark, M.D., Philadelphia; Vice-President, Frank H. Krusen, M.D., Philadelphia; Secretary-Treasurer, Arthur H. Ring, M.D., Arlington Heights, Mass.; Assistant Secretary-Treasurer, Robert C. Hughes, M.D., Paoli, Pennsylvania; Directors, for three years: William D. McFee, M.D., Boston; Harold D. Corbusier, M.D., Plainfield, N. J. For two years: William F. Roberts, M.D., St. John, N. B.; Thomas L. Smyth, M.D., Allentown, Pa. For one year: Byron S. Price, M.D., New York City; William H. Watters, M.D., Boston.

Standing Committees

Membership, William D. McFee, M.D., Boston; Robert C. Hughes, M.D., Paoli, Pa.; Franklin P. Lowry, M.D., Newton, Mass.; Organization, Robert C. Hughes, M.D., Paoli, Pa.; William D. McFee, M.D., Boston; Arthur H. Ring, M.D., Arlington, Mass.; Research, Franklin P. Lowry, M.D., Newton, Mass.; Grant E. Ward, M.D., Baltimore; Byron S. Price, M.D., New York City; Legislative, Harold D. Corbusier, M.D., Plainfield, N. J.; William F. Roberts, M.D., St. John, N. B.; Publication and Program, Byron S. Price, M.D., New York City; Frank H. Krusen, M.D., Philadelphia; William H. Schmidt, M.D., Philadelphia.

Frank Butler Granger, Founder of the Academy*

An Appreciation

By William D. McFee, M.D., Boston

Representing the Academy of Physical Medicine
Mr. Toastmaster, Ladies and Gentlemen:

Let me first express sincere thanks for the generous introduction, and to the committee for

*Read before the Annual Dinner of the Academy of Physical Medicine held in conjunction with the American Congress of Physical Therapy at the Palmer House, Chicago, September 13, 1933.

the pleasure and privilege of having a part in this fine program. I regret that time does not permit of relating in some detail how gratifying it has been to be present at the meeting of the Congress, renewing old acquaintances, making new ones, and drawing upon your great fund of experience for new information. I am sure that I voice the sentiment of the entire fellowship of the Academy in congratulating the Congress on the progress which is reflected in its program this year, on the admirable execution of each part, and on its large and interested attendance.

It seems altogether fitting that on this occasion we should set aside a little time in memory of our late friend and well-beloved associate, Dr. Frank B. Granger. He filled the time from 1876 to 1928 with a life that was not only happy and useful, but also helpful to those of us who are working in the same direction.

Undoubtedly, he would be with us today, had he not been so eager a student.

Dr. Granger was not only the founder of the Academy of Physical Medicine; he was its first president, and held that position for three years. We who knew him in public service recall that, entering the army with a captain's commission, he was made Director of the Department of Physiotherapy at Walter Reed Hospital, and later appointed to the Surgeon General's office as head of Physiotherapy for both Army and Navy. At the time of his retirement from military service he held the rank of lieutenant-colonel. He made further contributions to the advancement of the knowledge of this branch, as Instructor in Physical Therapy at the Harvard Postgraduate Medical School, through numerous scientific writings in the medical press, and through his splendid book on Physical Therapy Technic. He was Physician-in-Chief of the Department of Physical Therapy of Boston City Hospital, Director of Physical Therapy of the United States Army, Medical Counselor of the United States Veterans' Bureau and a member of the Council of Physical Therapy of the American Medical Association.

In all this work he had the coöperation and assistance of such men as Mock, Coulter, Henderson, Cotton, Stokes, Titus, Stewart, Westervelt, Ring, Davis, Hutchins, Deering, Hirsh, Murphy, Johnson, Tait McKenzie, Ireland, Sammons, Billings, Bainbridge, Corbusier, Brown, Bardwell, Sampson, Price, Morse, Snow, Massey, De Kraft and others, including our good friend who is presiding here tonight, William L. Clark, now President of the Academy.

The privilege of speaking here in appreciation of Dr. Frank Granger, as founder of the Academy of Physical Medicine is great; yet a greater privilege has been to know him as a close personal friend and co-worker. Standing in such relationship to a former colleague begets an obligation to render tribute as Granger would, himself, want it rendered; that is, to his work and to his ideals as a physician. Our best appreciation of his interest and activity in the Academy can be expressed by giving thought to his initial purpose, his ideals, and his aims for it.

Although the use of physical means for healing is as old as mankind, the foundation for the development of *Modern Physical Therapy* was laid by our government in the Army and Navy hospitals during the World War. Funds were provided from the national treasury, so that space and equipment would be available for the special staffs reporting directly to the Surgeon General's office. Then came the homeward bound ships laden with what had been the best of American manhood, young men facing lives of helpless and hopeless crippledom.

After surgery and medication had healed their wounds and saved their lives, many of these men were still in a pitiable condition. Every form of physical therapy was put to work for the restoration of function and the alleviation of disfigurement. To the patient the result often had the aspect of a miracle; to an ardent worker such as Granger it was a welcome confirmation of the possibilities which had been his beacon.

It is not strange that a group of men who worked together intensively on such an unprecedented program of human reconstruction should be impressed with the importance of the whole field of physical therapy, and could visualize a definite mission for its proper application. The experience which had been thrust upon them, and the opportunities which this experience furnished for mutual help and consultation had served to advance the knowledge of this branch of medical science many years in the course of a few months.

All of this thought was crystallized at a meeting in a hotel room in September, 1922, where the American Association for Physiotherapy was organized, and a constitution drafted, expressing as its purpose the advancement of the knowledge and the widening of the scope of the scientific employment of physiotherapy as properly related in the practice of medicine. Membership was limited to Fellows in good standing of the American Medical Association, found properly qualified, recommended by the Board of Directors and duly elected by the Association. It was Dr. Frank B. Granger, the generous and open-minded enthusiast, whom we elected the first president of the Association. We hear him spoken of as the "Father of Modern Physical Therapy" and recall that he saw new potentialities in their infancy, and that he visualized the association as a means of development to greater usefulness. The preservation of contacts which had been established in the years immediately preceding, with the way open for forming new contacts from time to time, was the straight path to a wider study of new concepts, and a wider application of those new concepts which showed merit.

The name was subsequently changed to American Academy of Physiotherapy, and more recently to Academy of Physical Medicine. This last change, be it observed, seemed eminently necessary because of the misuse of physical therapy means by quacks and laymen. The present title serves to identify our group more solidly with the medical profession.

For twelve years the Academy has pursued its original policy of admitting to fellowship only men of research capacity, of the highest professional qualifications and standing. This has necessarily kept it a small and conservative body. But it has made for effective functioning, and the preservation of traditions which justify members of the medical profession in looking to the Academy as a source of authoritative information and guidance in matters pertaining to physical therapy.

Let us recall then, that from the time of his election as first president until the time of his last message to his fellow workers, Granger never relaxed either his faith or his interest in the Academy. His last message was, in effect, an urge to "Carry on!"

"Carry on" to what purpose? Surely, nothing else than that original concept of advancing knowledge and widening the scope of the scientific employment of physical therapy. As we visualize the future of the Academy we must see ahead the goal of greater accomplishment.

The strength and the worth of the Academy are ultimately going to be measured by its contribution to the welfare of suffering humanity. There is no better contribution we can make than the development of scientific physical therapy, through research.

Research, in the present state of the art, is more than a vision, more than an ideal; it is a duty. Facilities have hitherto been lacking for the pursuit of research as we would like to see it done; but whenever such work has been done, valuable information has been gained, information which has been a help to the whole medical profession. I am speaking of research done by men who know what they are investigating. Only harm can come from the acceptance of results of investigations directed by those having only a superficial knowledge, be they ever so gifted as students of science. What is needed is a close and open-minded coöperation between the skillful physician and the scientist.

Now, among the numberless questions which we know are in the minds of the medical profession, there are some of outstanding importance, which cannot be answered with scientific records in their support, but which will be, we believe, answered definitely by scientific investigation. The end result which we visualize is a wider and a more successful use of physical therapy, a greater use by members of the medical profession and a decline in its abuse by misguided or unscrupulous laymen.

If it is through this that the use of physical therapy is to be elevated and extended, then the Academy can have no higher aim than to be at least in part the means of collecting and correlating that knowledge. To accept this mission as our responsibility, and hold the Academy thus to its original ideal, is the finest tribute we can pay here or in the future to the memory of its founder and first leader, Dr. Frank Granger.

BRISTOL NORTH DISTRICT MEDICAL SOCIETY

The Bristol North District Medical Society held its regular Fall Meeting, September 21, 1933, at the Bristol County Tuberculosis Hospital, Attleboro, Mass.

Dr. William H. Robey, President of the Massachusetts Medical Society, was present and spoke concerning the activities of the parent Society as to legislative matters and postgraduate instruction.

The speaker of the day was Dr. Arial George of Boston. His subject was "A New Treatment for Intracapsular Fracture of the Femur, with Special Reference to Non-Union." Dr. George stated that he was attracted to the study of this type of fracture because of the high percentage of non-union cases, i.e., forty-five to sixty-five per cent. He then demonstrated the conditions involved with an anatomical specimen and numerous diagrams and x-ray films. Dr. George had with him the curved casette which enabled him to make angular pictures of the neck of the femur and which permitted an exact appreciation of the results of treatment. He said that if under complete anesthesia the affected leg were abducted, strong traction used, and then marked inversion applied, the curved casette would show whether the operator had obtained the anatomical apposition so necessary for good results. He believed that one hundred per cent union would result from fixation after apposition proved to be anatomical in this way.

A discussion regarding postgraduate instruction, opened by Dr. Crandell, revealed that about thirty from this district were enrolled.

Dr. Kingsbury suggested doubling the number of meetings each year, and it was so voted.

Twenty-six members and four guests were present.

C. B. Kingsbury, *Secretary.*

INTERNATIONAL UNION AGAINST TUBERCULOSIS

The annual meeting of the Council of the International Union Against Tuberculosis, whose Chairman is Professor Nolen (Netherlands), was held in Paris, on Saturday, July 22; delegates from fourteen countries attended this meeting. At 10 A.M. an administrative session took place at the

Headquarters of the Union, 66 Boulevard St.-Michel, Paris. It was decided that the Conference of the International Union would be held in Warsaw on September 4, 5, and 6, 1934, and that the three following subjects, selected from a list of questions submitted by the various countries belonging to the Union, would be entered on the agenda:

Biological subject: Biological variations of the tubercle virus. Opening report by Professor Karwacki (Poland).

Clinical subject: The various forms of osteo-articular tuberculosis and their treatment. Opening report by Professor Putti (Italy).

Social subject: The utilization of dispensaries for the treatment of tuberculous patients. Opening report by Professor Leon Bernard (France).

Mr. John A. Kingsbury of the United States will give a lecture on "Methods in further control of tuberculosis. Report upon an experiment in a rural area characterized by a low tuberculosis rate." According to the plan followed at Oslo and at The Hague, ten speakers selected from different countries will be designated to open the discussion on each of the three main subjects.

The scientific session which took place at 3 P.M. was devoted to a report by Dr. Saenz on "Tuberculosis Bacillaemia." The report was followed by a discussion in which Professor Leon Bernard, Secretary General of the Union, Professor Valtis (Greece), Professor Bezancon (Paris), Professor Yevrem Nedelkovitch (Yugoslavia), and others took part.

The National Tuberculosis Association, 450 Seventh Avenue, New York, is arranging for a special party to attend the Warsaw meeting and those desiring to travel with this group may secure further information from the Association.

THE ESSEX NORTH DISTRICT MEDICAL SOCIETY

The next meeting of the Essex North District Medical Society will be at Andover Academy (Phillips Inn) on Wednesday, October 18, at 1 P.M.

Speakers:

Dr. W. H. Robey, President of the Massachusetts Medical Society.

Dr. Arthur W. Allen, "Pitfalls in Surgical Diagnosis."

Dr. B. H. Ragle, "Pitfalls of Medical Diagnosis."

E. S. Bagnall, *Secretary.*

NEW ENGLAND DERMATOLOGICAL SOCIETY

The next meeting of the New England Dermatological Society will be held on Wednesday, October 11, 3 P.M., at the Massachusetts General Hospital.

J. Harper Blaisdell, *Secretary.*

ETHER DAY AT THE MASSACHUSETTS GENERAL HOSPITAL

The Eighty-Seventh Anniversary of Ether Day will be celebrated at the Massachusetts General Hospital on Monday afternoon, October 16, 1933. Dr. George H. Wright is Chairman of the Committee in charge of arrangements. Mrs. Nathaniel Thayer will preside for the Trustees, and Dr. Leroy M. S. Miner, Dean of the Harvard Dental School, will give the address. The meeting will be held in the Moseley Memorial Building at 4:00 P.M. After the address the moving picture film "The Advent of Anesthesia" will be shown and tea will be served.

All interested are cordially invited to attend.

Please note that the hour is 4:00 P.M.

BOSTON CITY HOSPITAL HOUSE OFFICERS' ASSOCIATION

The first of a series of monthly meetings will be held on Tuesday, October 3, at 8:15 P.M. in the Cheever Amphitheatre, under the direction of Dr. George R. Minot.

PROGRAM

1. The Etiology of Anemia. By Dr. Maurice B. Strauss.
2. The Diagnostic Value of the Macroscopic Examination of the Blood. By Dr. Clark W. Heath.
3. Some Remarks on the Diagnosis of Blood Disorders. By Dr. George R. Minot.
4. The Treatment of Anemia. By Dr. William B. Castle.

The medical profession is cordially invited.

Robert T. Phillips, M.D., *Secretary.*

GREATER BOSTON MEDICAL SOCIETY

A meeting of this society will be held Tuesday, October 3, 1933, at 8:15 P.M. in the Auditorium, Beth Israel Hospital, 330 Brookline Avenue, Boston, Mass.

Speaker: Moses Paulson, M.D., Associate in Medicine at Johns Hopkins Medical School, Assisting Visiting Physician and Gastro-Enterologist to the Diagnostic Clinic of the Johns Hopkins Hospital.

Subject: "The Present Status of Idiopathic (chronic non-specific) Ulcerative Colitis."

Discussion: Daniel Fiske Jones, M.D.; I. R. Jankelson, M.D.; B. M. Banks, M.D.

Refreshments.

Maurice E. Barron, M.D., *Pres.*
D. B. Stearns, M.D., *Sec'y.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

September 29 and 30—New England Surgical Society at Boston.

October 3—Boston City Hospital House Officers' Association. See notice above.

October 3—Greater Boston Medical Society. See notice above.

October 5—Clinic at the Peter Bent Brigham Hospital, at 3:30 P.M., conducted by Dr. Henry A. Christian.

October 6 and 7—The One Hundred and Fiftieth Anniversary of the Harvard Medical School. See page 654.

October 9-12—The American Public Health Association will hold its sixty-second annual meeting at Indianapolis. For details on the scientific program write to the American Public Health Association, 450 Seventh Avenue, New York, N. Y.

October 9-13—The Clinical Congress of the American College of Surgeons will hold its twenty-third annual session at Chicago. Headquarters for the Congress will be at the Stevens Hotel.

October 11—The New England Dermatological Society. See notice on page 662.

October 13, 1933 - May 11, 1934—William Harvey Society. (Eight Lectures. Monthly.)

October 16, 17, 18—Massachusetts State Nurses' Association, Hotel Kimball, Springfield, Mass. For details write Helene G. Lee, R.N., 420 Boylston Street, Boston.

October 16—Ether Day at the Massachusetts General Hospital. See notice on page 662.

October 16-20—The International Assembly of the Inter-State Postgraduate Medical Association of North America. See page 665.

October 18—New England Physical Therapy Society. First Fall Meeting. Detailed announcement later. Dr. Arthur H. Ring, Secretary, 163 Hillside Avenue, Arlington, Mass.

October 23 - November 3—The 1933 Graduate Fortnight of the New York Academy of Medicine. The theme during the two weeks of intensive study will be Metabolic Disorders. A complete program may be obtained by writing Dr. Frederick P. Reynolds, The New York Academy of Medicine, 2 East 103rd Street, New York City.

October 25-30—International Congress on the Scientific and Social Contest Against Cancer will be held at Madrid. For information address Dr. Julio Bejarano, Atocha, 104. Madrid, Spain.

October 29—The American Board of Dermatology and Syphilology will hold written examinations for candidates in the following cities: New York City; St. Louis, Mo.; Boston, Mass.; Cleveland, Ohio; San Francisco, Calif.; Philadelphia, Pa.; Chicago, Ill. Information may be obtained from the Secretary, Dr. C. Guy Lane, 416 Marlborough Street, Boston, Mass.

December 15 and 16—The American Board of Dermatology and Syphilology will hold oral examinations in New York City. Information may be obtained from the Secretary, Dr. C. Guy Lane, 416 Marlborough Street, Boston, Mass.

April 16-20, 1934—The American College of Physicians will hold its Eighteenth Annual Clinical Session in Chicago at the Palmer House. For information write Mr. E. R. Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

July 24-31, 1934—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schnitz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

September 4, 5, 6, 1934—International Union Against Tuberculosis. See page 661.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

October 18—See page 662.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of November, January, March and May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

Schedule 1933-1934

Meetings will take place on November 8 at the Bear Hill Club, Stoneham; January 10 at Melrose; March (2nd Wednesday) at Wakefield, and May (2nd Wednesday) at Winchester.

ALLAN R. CUNNINGHAM, Secretary.
76 Church Street, Winchester, Mass.

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

Meetings will be held on October 25, January 31, and April 25 (Annual Meeting).

T. A. STAMAS, Secretary.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

October 5—12 noon at Norfolk County Hospital. Speaker: Dr. L. P. Crawford. Subject: Acute Intestinal Intoxication.

November 2—12 noon at Norfolk County Hospital. Stated meeting. Speaker: Dr. Timothy Leary. Subject: Comparative Experimental Arteriosclerosis with Human Coronary Sclerosis.

December 7—12 noon at Quincy City Hospital. Program by the hospital staff.

January 4—12 noon at Norfolk County Hospital. Speaker to be announced.

February 1—12 noon at Norfolk County Hospital. Stated meeting. Speaker: Dr. Sara Jordan. Subject: Stomach Ulcers.

March 1—12 noon at Quincy City Hospital. Program by the hospital staff.

April 5—12 noon at Norfolk County Hospital. Speaker: Dr. Elliott P. Joslin. Subject: Diabetes.

May 3—12 noon at Norfolk County Hospital. Annual Meeting. Election of Officers.

WORCESTER DISTRICT MEDICAL SOCIETY

All meetings to be held on Wednesdays as follows:

October 11—Dinner and scientific program at the Rutland State Sanatorium, Rutland, Mass.

November 8—Dinner and scientific program at the Grafton State Hospital, North Grafton, Mass.

December 13—Dinner and scientific program at St. Vincent Hospital, Worcester, Mass.

January 10—Dinner and scientific program at the Worcester City Hospital, Worcester, Mass.

February 14—Dinner and scientific program at the Worcester State Hospital, Worcester, Mass.

March 14—Dinner and scientific program at the Memorial Hospital, Worcester, Mass.

April 11—Open date.

May 9—Annual Meeting. Time and place to be announced later.

ERWIN C. MILLER, M.D., Secretary.

BOOK REVIEWS

Principles of Preoperative and Postoperative Treatment. By REGINALD A. CUTTING. Paul B. Hoeber, New York, 1932. Price $10.00.

Preoperative and postoperative treatment is necessarily a difficult topic to present in a formal way. Only arbitrary lines can be drawn in the selection and exclusion of subject matter. Further, while methods of diagnosis and even operative technic are subject to standardization, preoperative and postoperative therapy gives free range to the ideas of the individual surgeon. It must be said that the author has handled this difficult and controversial topic in a thoroughly scholarly and judicial manner. His basic teaching is sound, and on the whole his conclusions well supported by citations from the most recent dependable literature. No space is given to the exploitation of personal theories and methods — a defect that usually colors a treatise on this subject. Chapters are devoted to subjects such as Shock and Collapse, Blood Transfusion, Water Balance, Abdominal Distention and Gas Pains, Urinary Disturbances, Postoperative Pulmonary Complications and the Treatment of Operative Wounds. Other chapters take up the special problems that arise in the care of certain diseases such as Toxic Goiter, Cranio-Cerebral Injuries, Intestinal Obstruction and Extensive Burns.

The book should be particularly useful to the hospital interne, as practical instruction is given in the common surgical procedures that can be carried out on the wards.

The publishers have spared no expense in mak-

ing the book attractive in binding, illustration and print.

A Clinical Study of the Abdominal Cavity and Peritoneum. By EDWARD M. LIVINGSTON. Paul B. Hoeber, New York, 1932. Price $15.00.

The work is an extremely interesting and well-prepared study of abdominal signs and symptoms, placing particular emphasis on the anatomic and physiologic basis of their causation. It is particularly adapted to the use of the graduate student or practicing surgeon. The author has thrown text-book conventions to the winds and arranged his material in an informal and readable sequence. Anatomic and embryologic facts are enlivened by citations of their clinical importance and application. The personal interest of the author in visceral neurology has enabled him to prepare an unusually complete and authoritative section on this subject leavened by original observations and experiments.

A very attractive appendix to the text is formed by sixty pages devoted to the origin of eponyms in common clinical usage. There the reader may find, for example, short biographical records of McBurney, Fowler, Poupart, Vater, Winslow, Meckel, and many other individuals whose memory has been perpetuated in the nomenclature of anatomy or clinical surgery. In nearly every instance one page or more of the original article is reproduced in facsimile. Another feature is the appended questionnaire for the use of the student who wishes to crystallize his knowledge rather than be left with a general comprehension of the subject. The book is admirably adapted for use in graduate teaching, and should be placed in the hands of every student who is attempting to further his training in the principles and practice of abdominal surgery.

The publishers deserve an expression of gratitude from the medical profession for the excellent typography and illustrations. Their series of surgical monographs, of which this work is but one example, set a new and high level in the art of medical bookmaking.

Les Diagnostics Anatomo-Cliniques De P. Lecène, Recueillis Par Ses Elèves. II. Appareil Génital De La Femme. (Deuxième Partie.) By P. MOULONGUET. Masson et Cie., Paris, 1932. Price 80 fr.

This is a well-illustrated book devoted to a study of the diseases of the female genital tract. In the consideration of a disease, especial emphasis is placed upon its clinical manifestations, and the characteristic pathologic findings. It is essentially a treatise on surgical diagnosis, as methods of treatment receive only brief mention. The work is not significant enough to attract attention in this country where more complete and authoritative texts may be readily found.

Thérapeutique Médicale, VI, Coeur et Sang. Par M. LOEPER. Masson et Cie., Paris, 1933, 311 pp. Price 45 fr.

Much of the material in this volume cannot be regarded as in line with American cardiological teaching. The chapter on infectious endocarditis recommends such ill-founded remedies as colloidal sulfur, uroformine, copper or magnesium sulfate, gold salts, shock medication, etc. Ouabaine is offered as the medication of preference in the treatment of rapidly developing ventricular failure. There is, however, a very practical chapter on syncope giving a discussion of cardiac massage, intracardiac adrenalin, lobeline, camphor, etc., and an illuminating section is devoted to the use of sugar and insulin in heart disease. Clerc gives an able review of the use of quinine and quinidine in the treatment of auricular fibrillation. Unfortunately the book lacks an adequate discussion of the treatment of coronary thrombosis.

The section on the treatment of blood diseases occupies one-third of the volume. The chapter on the chemical treatment of anemias lays greater stress on the use of arsenic than is usual in this country. Weil gives an excellent account of recent developments in the treatment of pernicious anemia. There are chapters on blood transfusion, the treatment of leukemias, and one on the control of hemorrhage.

Because many of the drugs described are of doubtful value and the bases of their use insecure, this volume cannot be highly recommended.

Internal Derangements of the Knee-Joint. By A. G. TIMBRELL FISHER. The Macmillan Co., Publishers. Price $3.50.

The first edition of Mr. Fisher's book was an extraordinarily good monograph on internal derangements of the knee-joint, and it received a hearty welcome from the profession. In compiling the second edition the author has spared no effort, and the result is something that can only be typified by the use of the superlative.

He has expanded certain sections and rewritten others, and has added many illustrations and color plates prepared from the pathological specimens available in the Museum of the Royal College of Surgeons. Nothing as good in its description of the pathology and mechanism of injuries of the semilunar cartilages has ever been published.

It is well arranged, takes up the various injuries in logical order, and deals with their treatment and with the results of treatment exhaustively. The various injuries are illustrated also by the inclusion of characteristic case histories drawn from the author's case records. It is a book not only for the medical student and general surgeon, but one which ought to be read by every orthopedic surgeon as well.

The book is divided into two sections, part one dealing with pathology and surgery of semilunar cartilages, and part two with the pathology and surgery of other varieties of internal derangements. In the anatomic section the author points out certain common errors in the understanding of the relations of the semilunar cartilages to the capsule and ligaments which have been overlooked in other works. He reviews the symptomatology, emphasizing the careful analysis of the history and thoroughness in the examination.

The chapter on treatment is well handled with consideration of mechanical, manipulative and operative methods. He believes in manipulation in certain types of injury, particularly those which have been followed by the development of adhesions to the semilunar fat pads, and points out the necessity of the surgeon taking a leaf from the book of the unorthodox bone-setter. Under operative treatment he describes the usual methods as well as his own special technique in detail.

In part two he classifies loose bodies into three groups, depending upon their composition, and proceeds to consider each of these in detail with considerations of etiology based both on study of pathological material and upon experimental investigation.

Not least of the interesting features of the book is an appendix by Sir Robert Jones with running notes referring to different items in the text. This was perhaps the last published work of this great authority on internal derangements of the knee-joint.

All told, it is a most interesting and valuable work, and one that cannot be ignored by any surgeon who treats internal derangements of the knee-joint.

MISCELLANY

THE APPENDICITIS RECORD FOR 1932

By Frederick L. Hoffman, LL.D.
Consulting Statistician

The appendicitis deathrate of American cities for 1932 shows a measurable reduction compared with the maximum rate reached in 1930. In that year the rate was 18 per 100,000 against a rate of 13.3 in 1910. In 1931 the rate had been reduced to 17.4 and was further reduced to a rate of 15.7 in 1932. These are the rates for sixty cities which for 1932 had a combined population of nearly 29,000,000. The details of this record are shown in the table given below.

A more elaborate comparison is shown for 177 American cities showing for 1932 the following results. The combined rate had been reduced from 17.9 per 100,000 in 1931 to 16.6 in 1932. The actual fall in the number of deaths from appendicitis in these cities was from 7570 in 1931 to 7136 in 1932, a gratifying indication of progress in the treatment of appendicitis on the one hand and a possible decline in local incidence on the other. The rate increased in 81 cities, decreased in 92 and remained the same in 4. The combined population of these cities in 1932 was 43,000,000.

The highest rate of the cities under review was returned for Salt Lake City or 46.9 per 100,000 and the lowest rate for Union City, N. J., or 1.5, aside from 3 cities in which no deaths were reported for 1932, or respectively, Bethlehem, Pa.; Cicero, Ill., and Fresno, Cal. There were fourteen cities in 1932 where the rate exceeded 30 per 100,000, arranged in the order of their importance in the table given below.

TABLE 1

Deaths from Appendicitis—1910-1932

Year	No. of Cities	Population	Deaths	Death-Rate per 100,000
1910	60	18,656,436	2,480	13.3
1911	60	19,118,117	2,616	13.7
1912	60	19,569,879	2,712	13.9
1913	60	20,040,600	2,818	14.1
1914	60	20,503,331	2,948	14.4
1915	60	20,965,052	3,042	14.5
1916	60	21,426,774	3,175	14.8
1917	60	21,888,494	3,167	14.5
1918	60	22,330,216	2,907	13.0
1919	60	22,811,937	3,114	13.7
1920	60	23,275,106	3,644	15.7
1921	60	23,752,405	3,899	16.4
1922	60	24,229,704	3,936	16.2
1923	60	24,707,003	4,196	17.0
1924	60	25,184,302	4,338	17.2
1925	60	25,905,493	4,430	17.1
1926	60	26,138,900	4,653	17.8
1927	60	26,616,199	4,668	17.5
1928	60	27,333,472	4,837	17.7
1929	60	27,570,802	4,973	18.0
1930	60	27,995,351	5,049	18.0
1931	60	28,452,894	4,953	17.4
1932	60	28,923,952	4,528	15.7

No satisfactory explanation can be given for these extraordinary differences which, however, are maintained from year to year with approximate consistency. No thorough study of the geographical incidence of appendicitis has ever been made for this country and no detailed examination of all the facts that bear upon the problem has been attempted. Regardless of its practical importance appendicitis still continues to be neglected as a public health problem. In 1931 the number of deaths from appendicitis in the United States registration area was 18,113, equivalent to a deathrate of 15.2 per 100,000. When that rate is applied to the total population of continental United States the annual mortality is approximately 20,000. This compares with a rate

of 7.2 per 100,000 for England and Wales. For the state of New York the average appendicitis deathrate 1926-30 was 15 per 100,000, increasing to 15.7 in 1931. According to preliminary reports for 1932 the appendicitis deathrate for 1932 was 14.8. For urban New York, exclusive of New York City, the average rate has been 20.4 for the period 1926-30, and 20.2 in 1931, while for rural New York the average rate was 3.6 against 5.3 for 1931. It is explained in the annual report of the State Health Department for 1931 that, "The striking disparity in the urban and rural rates is due in large part to the fact that many residents of rural districts go to city hospitals for treatment, the deaths which occur among them being recorded in the places in which the hospitals are located. When correction is made for this factor the urban rate in 1931 is reduced from 20.2 to 15.9 and the rural rate increased from 5.3 to 13.4."

CITIES WITH EXCESSIVE APPENDICITIS DEATHRATES—1932

RATE PER 100,000

Salt Lake City	46.9
Lexington, Ky.	42.9
Oak Park, Ill.	40.4
Nashville, Tenn.	39.0
Little Rock, Ark.	38.3
Portland, Me.	38.0
Memphis, Tenn.	37.4
Wheeling, W. Va.	35.0
El Paso, Tex.	34.3
Greensboro, N. C.	33.7
Jackson, Mich.	33.5
Madison, Wis.	32.7
Savannah, Ga.	31.6
Dallas, Tex.	30.1

Among cities with unusually low rates the following may be mentioned.

CITIES WITH LOW APPENDICITIS DEATHRATE—1932

RATE PER 100,000

Union City, N. J.	1.5
Altoona, Pa.	2.3
Salem, Mass.	2.3
Akron, Ohio	3.0
Topeka, Kan.	3.0
Medford, Mass.	3.1
Mount Vernon, N. Y.	3.1
Pasadena, Cal.	3.6
McKeesport, Pa.	5.3
New Rochelle, N. Y.	5.3

The appendicitis deathrate among males is consistently higher than among females. For England and Wales in 1931 the male deathrate for appendicitis was 8.4 per 100,000, while the rate for females was only 6.1. This disparity in rates has existed for many years and no explanation has been forthcoming as to the probable reasons for the difference. I give below the deathrate by ages for males and females and both sexes combined for New York, separating New York City from the rest of the state, giving the returns for 1931 for purpose of illustration. It shows for New York City the highest deathrate for both males and females at ages 65-74, while in upstate New York the male deathrate was highest at ages 55-64, and the female rate at 75 and over.

APPENDICITIS MORTALITY IN NEW YORK—1931

RATE PER 100,000

	New York City		Rest of State	
	Male	Female	Male	Female
All ages	19.2	13.4	18.2	11.6
Under 5 yrs.	15.2	15.1	7.1	8.2
5-14 yrs.	16.1	12.1	14.3	9.1
15-24 yrs.	12.7	8.5	16.3	8.2
25-34 yrs.	14.2	10.4	16.7	9.9
35-44 yrs.	22.8	12.1	20.8	7.2
45-54 yrs.	25.1	14.8	25.0	17.8
55-64 yrs.	29.6	26.2	25.3	21.0
65-74 yrs.	47.7	34.5	23.9	18.0
75 and over	34.6	25.3	20.5	25.5

The table following will show the deaths and deathrates from appendicitis in 1931 and 1932 for the five largest American cities.

APPENDICITIS MORTALITY IN FIVE LARGE CITIES—1931-1932

RATE PER 100,000

	1931		1932	
	Deaths	Rate	Deaths	Rate
Chicago	612	17.7	511	14.5
Detroit	291	17.8	241	14.2
Los Angeles	193	14.6	168	12.2
New York	1,157	16.3	1,065	14.8
Philadelphia	274	13.9	223	11.3

It is shown for the five largest cities that the results conform to the general experience of a decline in the rate for 1932 compared with 1931. Whether this decrease reflects increased surgical skill or an actual diminution in the incidence of appendicitis cannot be answered. An answer to this question would certainly be an interesting contribution to medical statistics.—Reprinted from *The Spectator*, August 3, 1933, issue.

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